

VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the reissuance of the VPDES permit listed below. This permit is being processed as a **Major Industrial** permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260. The discharges result from coal-fired steam electric power generation. This permit action consists of reissuing the permit for a five-year term with limitations on Heat Rejected, pH, TSS, Oil & Grease. The permit also addresses toxics management and storm water pollution prevention.

1. Facility Name and Address: SIC Code: 4911

APCO – Glen Lyn
1 Riverside Plaza
Columbus, OH 43215

Location: U.S. Route 460, Glen Lyn, VA (Giles County)

2. Permit No. VA0000370 Expiration Date: July 10, 2009

3. Owner Contact: Name: Mr. Alan R. Wood, P.E. Title: Manager, Water & Ecological
Telephone No: (614) 716-1233 Resource Services

4. Application Complete Date: March 12, 2009
Permit Drafted By: Lynn V. Wise Date: May 27, 2009
DEQ Regional Office: West Central Regional Office
Reviewed By: Kip D. Foster Date: 6/4/09
Public Comment Period Dates: From: 6/2/09 To: 7/2/09

5. Receiving Stream Name: New River, East River, Adair Run, and Adair Run, UT
Basin: New River Subbasin: NA Section: 1 Class: IV Special Standards: u

	<u>New River*</u>	<u>East River</u>	<u>Adair Run</u>	<u>Adair Run, UT</u>
7-Day, 10 Year Low Flow:	653 mgd	4.6 mgd	0.42 mgd	0 mgd
1-Day, 10 Year Low Flow:	565 mgd	3.7 mgd	0.34 mgd	0 mgd
30-Day, 5-Year Low Flow:	866 mgd	6.8 mgd	0.62 mgd	0 mgd
30-Day, 10-Year Low Flow:	775 mgd	5.9 mgd	0.54 mgd	0 mgd
Harmonic Mean Flow:	1939 mgd	20.9 mgd	1.90 mgd	0 mgd

* Please see Flow Frequency Determination Memo for corrections for each outfall

Tidal? YES/NO

On 303(d) list? YES/NO

6. Operator License Requirements: None

7. Reliability Class: NA

**State "Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review**

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name: APCO Glen Lyn
 NPDES Permit Number: VA0000370
 Permit Writer Name: Lynn V. Wise
 Date: May 28, 2009

Major Minor Industrial Municipal

I.A. Draft Permit Package Submittal Includes:

	Yes	No	N/A
1. Permit Application?	X		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?		X	
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?	X		
6. A Reasonable Potential analysis showing calculated WQBELs?			X
7. Dissolved Oxygen calculations?			X
8. Whole Effluent Toxicity Test summary and analysis?	X		
9. Permit Rating Sheet for new or modified industrial facilities?			X

I.B. Permit/Facility Characteristics

	Yes	No	N/A
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet or permit contain a description of the wastewater treatment process?	X		

I.B. Permit/Facility Characteristics – cont.	Yes	No	N/A
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?		X	
5. Has there been any change in streamflow characteristics since the last permit was developed?	X		
6. Does the permit allow the discharge of new or increased loadings of any pollutants?		X	
7. Does the fact sheet or permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?	X		
a. Has a TMDL been developed and approved by EPA for the impaired water?		X	
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?		X	
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?	UNKNOWN		
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		X	
10. Does the permit authorize discharges of storm water?	X		
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?		X	
12. Are there any production-based, technology-based effluent limits in the permit?		X	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?		X	
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?	X		
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		X	
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?			X
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?		X	
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Checklist – for POTWs
(To be completed and included in the record only for POTWs)

II.A. Permit Cover Page/Administration

	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?			
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?			

II.B. Effluent Limits – General Elements

	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?			
2. Does the fact sheet discuss whether “antibacksliding” provisions were met for any limits that are less stringent than those in the previous NPDES permit?			

II.C. Technology-Based Effluent Limits (POTWs)

	Yes	No	N/A
1. Does the permit contain numeric limits for <u>ALL</u> of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?			
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?			
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?			
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?			
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?			
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			

II.D. Water Quality-Based Effluent Limits

	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?			
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL?			

II.D. Water Quality-Based Effluent Limits – cont.	Yes	No	N/A
3. Does the fact sheet provide effluent characteristics for each outfall?			
4. Does the fact sheet document that a “reasonable potential” evaluation was performed?			
a. If yes, does the fact sheet indicate that the “reasonable potential” evaluation was performed in accordance with the State’s approved procedures?			
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?			
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have “reasonable potential”?			
d. Does the fact sheet indicate that the “reasonable potential” and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?			
e. Does the permit contain numeric effluent limits for all pollutants for which “reasonable potential” was determined?			
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?			
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?			
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?			
8. Does the record indicate that an “antidegradation” review was performed in accordance with the State’s approved antidegradation policy?			

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?			
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?			
3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements?			
4. Does the permit require testing for Whole Effluent Toxicity?			

II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?			
2. Does the permit include appropriate storm water program requirements?			

II.F. Special Conditions – cont.

	Yes	No	N/A
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?			
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?			
6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)?			
a. Does the permit require implementation of the “Nine Minimum Controls”?			
b. Does the permit require development and implementation of a “Long Term Control Plan”?			
c. Does the permit require monitoring and reporting for CSO events?			
7. Does the permit include appropriate Pretreatment Program requirements?			

II.G. Standard Conditions

	Yes	No	N/A			
1. Does the permit contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?						
<p>List of Standard Conditions – 40 CFR 122.41</p> <table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top;"> Duty to comply Duty to reapply Need to halt or reduce activity not a defense Duty to mitigate Proper O & M Permit actions </td> <td style="vertical-align: top;"> Property rights Duty to provide information Inspections and entry Monitoring and records Signatory requirement Bypass Upset </td> <td style="vertical-align: top;"> Reporting Requirements Planned change Anticipated noncompliance Transfers Monitoring reports Compliance schedules 24-Hour reporting Other non-compliance </td> </tr> </table>				Duty to comply Duty to reapply Need to halt or reduce activity not a defense Duty to mitigate Proper O & M Permit actions	Property rights Duty to provide information Inspections and entry Monitoring and records Signatory requirement Bypass Upset	Reporting Requirements Planned change Anticipated noncompliance Transfers Monitoring reports Compliance schedules 24-Hour reporting Other non-compliance
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2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?						

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Review Checklist – For Non-Municipals
(To be completed and included in the record for all non-POTWs)

II.A. Permit Cover Page/Administration

	Yes	No	N/A
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements

	Yes	No	N/A
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether “antibacksliding” provisions were met for any limits that are less stringent than those in the previous NPDES permit?	X		

II.C. Technology-Based Effluent Limits (Effluent Guidelines & BPJ)

	Yes	No	N/A
1. Is the facility subject to a national effluent limitations guideline (ELG)?	X		
a. If yes, does the record adequately document the categorization process, including an evaluation of whether the facility is a new source or an existing source?	X		
b. If no, does the record indicate that a technology-based analysis based on Best Professional Judgement (BPJ) was used for all pollutants of concern discharged at treatable concentrations?			X
2. For all limits developed based on BPJ, does the record indicate that the limits are consistent with the criteria established at 40 CFR 125.3(d)?	X		
3. Does the fact sheet adequately document the calculations used to develop both ELG and /or BPJ technology-based effluent limits?	X		
4. For all limits that are based on production or flow, does the record indicate that the calculations are based on a “reasonable measure of ACTUAL production” for the facility (not design)?			X
5. Does the permit contain “tiered” limits that reflect projected increases in production or flow?		X	
a. If yes, does the permit require the facility to notify the permitting authority when alternate levels of production or flow are attained?			X
6. Are technology-based permit limits expressed in appropriate units of measure (e.g., concentration, mass, SU)?	X		

II.C. Technology-Based Effluent Limits (Effluent Guidelines & BPJ) – cont.	Yes	No	N/A
7. Are all technology-based limits expressed in terms of both maximum daily, weekly average, and/or monthly average limits?	X		
8. Are any final limits less stringent than required by applicable effluent limitations guidelines or BPJ?		X	

II.D. Water Quality-Based Effluent Limits	Yes	No	N/A
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the record indicate that any WQBELs were derived from a completed and EPA approved TMDL?		X	
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a "reasonable potential" evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"?	X		
d. Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations where data are available)?	X		
e. Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined?			X
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term (e.g., average monthly) AND short-term (e.g., maximum daily, weekly average, instantaneous) effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the fact sheet indicate that an "antidegradation" review was performed in accordance with the State's approved antidegradation policy?	X		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			X
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	X		
3. Does the permit require testing for Whole Effluent Toxicity in accordance with the State's standard practices?	X		

II.F. Special Conditions	Yes	No	N/A
1. Does the permit require development and implementation of a Best Management Practices (BMP) plan or site-specific BMPs?	X		
a. If yes, does the permit adequately incorporate and require compliance with the BMPs?	X		
2. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			X
3. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?	X		

II.G. Standard Conditions	Yes	No	N/A
1. Does the permit contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?	X		
List of Standard Conditions – 40 CFR 122.41			
Duty to comply Duty to reapply Need to halt or reduce activity not a defense Duty to mitigate Proper O & M Permit actions	Property rights Duty to provide information Inspections and entry Monitoring and records Signatory requirement Bypass Upset	Reporting Requirements Planned change Anticipated noncompliance Transfers Monitoring reports Compliance schedules 24-Hour reporting Other non-compliance	
2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for existing non-municipal dischargers regarding pollutant notification levels [40 CFR 122.42(a)]?	X		

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	<u>Lynn V. Wise</u>
Title	<u>Environmental Engineer, Sr.</u>
Signature	<u><i>Lynn V. Wise</i></u>
Date	<u>May 28, 2009</u>

8. Permit Characterization:

- Private Federal State POTW
 Possible Interstate Effect Interim Limits in Other Document (attach to Fact Sheet)

9. Description of Facility Activities: Attach a Schematic of Wastewater Treatment System(s), and provide a general description of the production cycle(s) and activities of the facility. Include production rates if production-based technology guidelines apply.

Discharge Description

OUTFALL NUMBER	DISCHARGE SOURCE (1)	TREATMENT (2)	FLOW (3)
001	Unit 6 Turbine Oil Cooler (once-through cooling water); Storm water from the facility and from off-site private properties	None	0.676 MGD (+ 1.93 mgd SW* + off-site run-off)
002	Unit 6 Once-through Condenser cooling water (20% of total)	None	31.8 MGD
003	Unit 5 Once-through Condenser cooling water	None	124 MGD
004	Bottom Ash Sluice Water; Low Volume Wastes; Coal Pile drainage; Water Treatment Filter Backwash; Storm water	Flow equalization, sedimentation, skimming, coagulation	5.47 MGD (+ 0.5 mgd SW*)
005	Unit 6 Once-through Condenser cooling water (80% of total); Unit 5 Turbine Water Cooler; Storm water (Outfall 502)	None	178.83 MGD (+ 0.06 mgd SW*)
006	Fly Ash Sluice Water (if needed); Storm water	Flow equalization, sedimentation, skimming, neutralization, coagulation	0.00052 MGD (3.56 MGD if wet sluice & SW*)
007	Leachate collection (ash landfill); Storm water runoff; spring water	flow equalization, sedimentation, skimming, coagulation	0.103 MGD (+ 1.043 mgd sw*)
008 (not yet in service)	Storm water management pond for Adair Run ash landfill – Non-contact runoff	flow equalization, sedimentation	4.07 MGD max*
009 (not yet in service)	Storm water from lateral landfill expansion – Non-contact runoff	None	0.18 MGD max*

- (1) List operations contributing to flow.
 (2) Give brief description, unit by unit.
 (3) Give maximum 30-day average flow for industry, and design flow for municipal.
 * Maximum storm water discharge from 10-year, 24-hour storm event

See **Attachment A** for a schematic diagram showing the production and wastewater treatment systems and storm water drainage maps.

The facility is a coal-fired steam electric generating station consisting of one 90 MW unit and one 240 MW unit. Water is withdrawn from the New River both for noncontact cooling water and to

9. Description of Facility Activities (continued):

treat for boiler water to generate steam. Each unit has electrostatic precipitators for the collection of fly ash. Historically, the primary method of disposal was transporting conditioned ash in trucks to the plant's permitted ash landfill; currently most of the ash is sold for beneficial uses. If the dry unloading system is out of service, the facility maintains a fly ash pond for emergency disposal of the ash. It is anticipated that this wet ash system will be closed out in the near future. Bottom ash is sluiced (water collected) to ponds for the settling of solids prior to discharge. Bottom ash is also sold or disposed of in the onsite landfill. All "low volume wastes" (as defined in the Code of Federal Regulations) are directed to the bottom ash settling ponds before discharge. The noncontact cooling water discharges receive no treatment prior to discharge. Storm water run-off from the site is discharged through various outfalls as listed in the table above. Further discussion of the discharge from each outfall is provided in Section 16 below.

A site visit memo and additional facility information (as provided with the permit application) are included in **Attachment A**.

10. Sewage Sludge Use or Disposal: Provide a description of sewage sludge land application plan elements addressed in permit, if applicable.

Not applicable. (All domestic wastewater is discharged to the sanitary sewer.)

11. Discharge(s) Location Description:

The majority of the facility is located on the Narrows, VA Quadrangle. Portions of the facility are located on the Peterstown WV and Lerona WV Quadrangles. Please see **Attachment A** for topo map.

Plant location: Latitude 37°22'12" Longitude 80°51'49"

Outfall locations are provided in **Attachment A**.

12. Material Storage: List the type and quantity of wastes, fluids, or pollutants being stored at this facility. Briefly describe the storage facilities and list any measures taken to prevent the stored material from reaching state waters.

In addition to the coal pile, various materials are stored on-site. Please see **Attachment A** for a listing of materials stored in each storm water drainage area.

13. Ambient Water Quality Information:

APCO Glen Lyn discharges to the New River from four outfalls between river mile 30.2 and 28.81, to the East River at river mile 0.12 and 0.04, to Adair Run at river mile 0.12, and to an unnamed tributary of Adair Run at river mile 0.23. The stream is classified as Class IV (Mountainous Zones Waters), with special standard "u", limiting the maximum temperature to 27 °C unless caused by natural conditions, and a maximum temperature rise above natural temperatures of 2.8 °C. Critical stream flow determinations were based on the continuous record gages on the New River at Glen Lyn, VA (#03176500) and on Wolf Creek near Narrows, VA (#03175500). The Wolf Creek gage was used to estimate flows for the East River and Adair Run sites. Based upon decreases in the critical flows at the gages, the stream flows at the discharge points have decreased slightly from those determined in 2004.

14. Antidegradation Review & Comments (continued):

The antidegradation review begins with the Tier determination. As was previously noted, this segment of the New River is listed on the 2008 303(d) list for failure to meet the fish consumption use. During the 2004 permit reissuance process, the New River was classified as a Tier 1 water; however, in accordance with a memo from the Water Division Director dated February 8, 2005, fish consumption advisories do not constitute grounds for a Tier 1 determination. Therefore, the New River in the vicinity of the discharge from APCO Glen Lyn is determined to be a Tier 2 waterbody and no significant degradation of existing quality is allowed. The East River and Adair Run are also determined to be Tier 2 water bodies. Tier 2 is appropriate because the available data indicate that the water quality is better than the standards for all parameters for which the Board has adopted criteria. The discharge from outfall 008 will be to an unnamed tributary of Adair Run, which is considered to be an intermittent stream. The tributary will be afforded protection as a Tier 1 water body because it cannot be reasonably expected to maintain water quality better than the standards.

For Tier 1 waters, antidegradation is addressed by ensuring that effluent limits comply with water quality criteria. Permit limits for discharges into tier 1 waters are established by determining wasteload allocations (WLAs) that will result in attaining and/or maintaining all water standards that apply to such waters, including narrative criteria. Such WLAs will provide for the protection and maintenance of all existing uses.

Since the quality of tier 2 waters is better than required by the standards, no significant degradation of the existing quality will be allowed. For purposes of aquatic life protection, "significant degradation" means that no more than 25% the difference between the acute and chronic aquatic criteria values and the existing quality (unused assimilative capacity) may be allocated. For purposes of human health protection, "significant degradation" means that no more than 10% of the difference between the human health criteria and the existing quality (unused assimilative capacity) may be allocated. The significant degradation baseline (antidegradation baseline) for aquatic life protection is calculated for each pollutant as follows:

$$0.25 (\text{WQS} - \text{existing quality}) + \text{existing quality} = \text{Antidegradation baseline}$$

The antidegradation baseline for human health protection is calculated for each pollutant as follows:

$$0.10 (\text{WQS} - \text{existing quality}) + \text{existing quality} = \text{Antidegradation baseline}$$

The "antidegradation baselines" become the new water quality criteria in Tier 2 waters and effluent limits for future expansions or new facilities must be written to maintain the antidegradation baselines for each pollutant.

Effluent limitations are discussed in detail in Section 16. below. The discharge is in compliance with antidegradation requirements set forth in the Water Quality Standard Regulation, 9 VAC 25-260-30. The antidegradation review was conducted as described in Guidance Memorandum 00-2011, dated August 24, 2000, and complies with the antidegradation policy contained in Virginia's Water Quality Standards.

15. Site Visit: Date May 13, 2009 Performed by: Lynn V. Wise

Please see **Attachment A** for a copy of the site visit memo. A Technical and Laboratory Inspection was conducted on October 23, 2006 by Troy Nipper, Environmental Inspector Sr., and a Storm Water Inspection was conducted on March 24, 2008 by Gerald A. Duff, Environmental Inspector Sr. A copy of each report is on file at the DEQ Blue Ridge Regional Office in Roanoke.

16. Effluent Screening & Limitation Development:

General

A review of the DMR data for the past five years indicates the facility is in compliance with current limitations. Limitations from the previous permit were reviewed and carried forward as appropriate. Effluent screening and limitation development documentation may be found in **Attachment C**.

The facility is subject to the Federal Effluent Guidelines for Steam Electric Power Generation found at 40 CFR Part 423. Additionally, storm water discharges from the facility are regulated as "storm water associated with industrial activity". Limitations and monitoring requirements based on these regulations are discussed below, as appropriate.

316(a) Variance/316(b) Determination - In 1977, APCO requested and was granted a variance under Section 316(a) of the Clean Water Act. This variance required a study of the impact of the thermal discharges from the facility on the receiving waters. The granting of the variance resulted in a total thermal loading limit for the New River (reported as outfall 999) and a thermal loading limit for the East River (outfall 005) instead of "end-of-pipe" limitations at each cooling water discharge. The permittee has indicated that the conditions under which the variance was granted have not changed. Therefore, the permit limitations for thermal discharges will remain as in the current permit. However, based on the comment from EPA on the last permit reissuance that "the permittee should assemble the information necessary to support the variance and the permitting authority determine suitability of the variance in the next permit reissuance", a special condition will be included in the permit to require the submission of the necessary information. The SWCB approved the 316(b) demonstration on October 25, 1978. It has been tentatively determined that the cooling water intake structure continues to reflect best technology available (BAT) and DEQ proposes no changes to the intake at this time. However, although EPA has suspended the Phase II Cooling Water Intake Structure regulations for existing large power plants in response to the 2nd Circuit Court of Appeals in *Riverkeeper, Inc., v. EPA*, EPA issued a notice in the Federal Register on July 9, 2008 stating that until a revised Rule was in place, 316(b) requirements should be issued by permit writers on a Best Professional Judgment basis. Please see Section 19 k. and l. and **Attachment C** for additional information.

OUTFALL 001

The discharge from outfall 001 is the result of once-through non-contact cooling water from the unit #6 turbine oil cooler and storm water run-off from the majority of the plant site.

Cooling water - Monitoring of flow and heat rejected is required by the current permit. The data from the past permit term are included in **Attachment C**. Effluent limitations and monitoring requirements for this discharge are as follows:

Flow - No limitation, monitoring and reporting required.

Temperature (limited as Heat Rejected) – Monitoring and reporting required. This discharge was included in the 316(a) variance; therefore, thermal loading for this outfall must be reported, keeping the total thermal loading from all discharges within that allowed. Please see outfall 999 for limitation.

Note: pH limitations were removed in the 1996 modification. This was based on agency guidance for once-through noncontact cooling water effluent that is withdrawn from and discharged back to the same source. An evaluation of the cooling process found that no reasonable potential exists for the pH of the cooling water or the receiving water to be changed, even in the event of an equipment failure. In addition, the permittee has no control over the pH of the intake water and no reasonable remedy is available to the permittee if the intake water fails to meet the applicable water quality standard.

16. Effluent Screening & Limitation Development (Outfall 001 continued):

Toxics – The discharge must be evaluated to determine whether there is reasonable potential for the effluent to violate the Water Quality Standards adopted by the State Water Control Board (9 VAC 25-260 et. seq.). Effluent data from Form 2C were reviewed to determine whether the data are “suitable” to be used in the permit limit evaluation. The test for suitability is that the data must be above the respective quantification level (QL) and must represent the exact substance being evaluated. None of the data were suitable for limitation evaluation; therefore, no additional water quality based limits are needed.

Storm water – The storm water that discharges through outfall 001 is subject to the requirements for storm water associated with industrial activity for the Steam Electric Power Generation category. In accordance with agency guidance, annual analytical monitoring is required for total recoverable iron with a monitoring cutoff concentration of 1 mg/l. If the monitoring data reported by the permittee indicates conclusively that a parameter is not present in the storm water runoff above the monitoring cutoff concentration, the parameter may be dropped from the monitoring requirements. During a previous permit reissuance process, the iron monitoring data were reviewed and it was determined that additional monitoring was not required. The data submitted with the current permit application verifies this conclusion.

Storm event monitoring (denoted as **outfall 901**) was required during the previous permit term for flow, total recoverable nickel, and total recoverable zinc. Additional data were also provided as part of the storm water management special conditions and the permit application. These data are tabulated below. In order to determine whether the discharge has the potential to adversely affect the water quality of the receiving stream, the data were compared to the more stringent of the EPA benchmark values for storm water (as published in the Federal Register for the EPA multi-sector general permit and found in **Attachment C**) and the DEQ screening criteria established at two times the acute criteria in the Water Quality Standards. The comparison was made to evaluate whether sufficient Best Management Practices (BMPs) were in place at the facility to minimize contamination of storm water. It is noted that the EPA benchmark values for metals are for the total rather than dissolved form.

	Nickel, TR (µg/l)	Zinc, TR (µg/l)	Oil & Grease (mg/l)	TSS (mg/l)	NO3-NO2 (mg/l)	Phosphorus (mg/l)	Chromium (µg/l)	Copper (µg/l)	Nickel (µg/l)	Iron (µg/l)	Zinc (µg/l)
	4	304	<2	5.2	1.24	0.36	<5	<5	<2	108	<10
	8	122									
	<QL	102									
	30	648									
	<QL	117									
	<QL	247									
	<QL	172									
	<QL	205									
	<QL	31.2									
	<QL	35									
	<QL	187									
	2.4	74.3									
	<QL	31.2									
	<QL	13									
	<QL	8.7									
BM	1417	117	15	100	0.68	2		63.6	1417	1000	117
SC	260	170					840	18.8	260		170

16. Effluent Screening and Limitation Development (Outfall 001/901 continued):

Annual Toxicity Test Results for Outfall 901		
Date	Test Species	LC ₅₀
August 23, 2005	<i>Ceriodaphnia dubia</i>	> 100%
	<i>Pimephales promelas</i>	> 100%
August 8, 2006	<i>Ceriodaphnia dubia</i>	> 100%
	<i>Pimephales promelas</i>	> 100%
July 24, 2007	<i>Ceriodaphnia dubia</i>	> 100%
	<i>Pimephales promelas</i>	> 100%
August 28, 2008	<i>Ceriodaphnia dubia</i>	> 100%
	<i>Pimephales promelas</i>	> 100%
DEQ Screening Criteria = 100% effluent		

As can be seen in the tables above, only zinc has been found to be present in concentrations greater than the DEQ screening criteria and the EPA Benchmark Value. In accordance with current agency guidance, data that are above the screening criteria result in the establishment of a Storm Water Management Evaluation for that specific pollutant. This requirement typically includes quarterly chemical monitoring and annual acute toxicity monitoring. Since the effluent has passed all of the toxicity tests with an LC₅₀ greater than 100% effluent, no additional toxicity testing is being required. It is noted that the effectiveness of the Storm Water Pollution Prevention Plan and need for additional BMPs should be reviewed.

OUTFALL 002 and OUTFALL 003

Discharge from these outfalls consists solely of once-through noncontact cooling water. Outfall 002 discharges approximately 20% of the total cooling water flow from the unit #6 condenser. Outfall 003 discharges the cooling water from the unit #5 condenser. This water is screened intake water from the New River. A tabulation of the DMR data for the previous permit term may be found in **Attachment C**. The limits applicable to these discharges are as follows:

Flow – No limitation, monitoring and reporting required.

Temperature (limited as Heat Rejected) - These discharges were included in the 316(a) variance study. The thermal loading limits proposed in the study have been retained in this permit. The limit is imposed as heat rejected in units of BTU/hr. The heat rejection is based on use of a chart (see **Attachment C**) that plots the load in MW's against the BTU's per hour to the river. The MW load of each unit is continuously recorded and the highest point in the month is read from the chart to obtain the maximum heat rejection per hour for the unit. The charts were based on condenser checks at different loads based on pounds of steam/KW. Please see outfall 999 for limitation.

Note: pH limitations were removed during the 1996 modification. This was based on agency guidance for once-through noncontact cooling water effluent that is withdrawn from and discharged back to the same source. An evaluation of the cooling process found that no reasonable potential exists for the pH of the cooling water or the receiving water to be changed, even in the event of an equipment failure. In addition, the permittee has no control over the pH of the intake water and no reasonable remedy is available to the permittee if the intake water fails to meet the applicable water quality standard.

16. Effluent Screening and Limitation Development (Outfalls 002 & 003 continued):

Toxics - The discharges must be evaluated to determine whether there is reasonable potential for the effluent to violate the Water Quality Standards adopted by the State Water Control Board (9 VAC 25-260 et. seq.). Effluent data from Form 2C were reviewed to determine whether the data are "suitable" to be used in the permit limit evaluation. The test for suitability is that the data must be above the respective quantification level (QL) and must represent the exact substance being evaluated. None of the data were suitable for limitation evaluation; therefore, no additional water quality based limits are needed.

OUTFALL 004

The bottom ash treatment pond overflow discharges through outfall 004. The operations contributing to the flow to the treatment pond include: bottom ash transport, boiler and evaporator blowdown, sumps, water treatment plant waste and filter backwash, floor and roof drains, and other low volume wastes. The ponds also receive storm water that falls directly on the ponds, storm water and dust suppression water from the fly ash truck loading area, storm drains from the Route 460 bridge, and storm water from the Outfall 502 drainage area. (Please see additional discussion under outfall 005 below.) In November 1996, the permit was modified to recognize coal pile run-off as an addition to the wastestream flowing to outfall 004. DMR data from the previous five years may be found in **Attachment C**. The following limitations and monitoring requirements apply at outfall 004:

Flow - No limitation, monitoring and reporting required.

pH - Limitations are based on the Federal Effluent Guidelines and are in conformance with the water quality standards for this stream segment. Minimum 6.0 s.u., maximum 9.0 s.u.

TSS - The solids concentration limitations are based on Federal Effluent Guidelines (40 CFR Part 423) (See **Attachment D**) for stream electric power generation facilities. For both low volume wastes and bottom ash transport water, the monthly average TSS concentration is limited to 30.0 mg/l with a maximum daily limit of 100.0 mg/l. At this facility, coal pile run-off is also treated and discharged through this outfall. As noted above the permit was modified to reflect this in November 1996. Coal pile run-off is also regulated by a Federal Effluent Guideline, which limits TSS to 50.0 mg/l at any time. Because the permittee could not sample the coal pile run-off as an internal outfall, and because the run-off was receiving additional treatment through the bottom ash ponds, a flow-weighted TSS limit was derived. The calculations resulted in a daily max of 96.0 mg/l at outfall 004. These limitations will remain in the proposed permit.

Oil & Grease - These limitations are also based on the Federal Effluent Guidelines as described above. The discharge must meet a daily maximum of 20.0 mg/l and a monthly average of 15.0 mg/l. These limitations will remain in the proposed permit.

Toxics - The discharge must be evaluated to determine whether there is reasonable potential for the effluent to violate the Water Quality Standards adopted by the State Water Control Board (9 VAC 25-260 et. seq.). Effluent data from Form 2C were reviewed to determine whether the data are "suitable" to be used in the permit limit evaluation. The test for suitability is that the data must be above the respective quantification level (QL) and must represent the exact substance being evaluated. Chloride, antimony, arsenic, chromium, copper, lead and zinc were detected in the discharge; however, none were detected above the site specific quantification level for this discharge. Other parameters were detected but there have been no Water Quality Standards adopted by the Board for these parameters or they only apply to public water supplies. Therefore, no limitations are required. (Please see **Attachment C** for a tabulation of the data.)

16. Effluent Screening and Limitation Development (Outfall 004 continued):

Storm water - The storm water flowing to outfall 004 undergoes the same treatment as the bottom ash transport water and the low volume waste waters. The storm water has a relatively low flow contribution to the treatment system. Because the storm water undergoes treatment and it would be difficult to detect when the storm water was being discharged due to long retention times, storm event monitoring will not be required at this time.

OUTFALL 005

The effluent from outfall 005 consists of once-through noncontact cooling water from unit #6 (80% of unit #6 flow) and unit #5 turbine water cooler. This outfall also receives storm water runoff from the roof drains of the employee assembly building, the paved employee parking area, adjacent railroad tracks, and any storm water that possibly collects in the secondary containment dike from the covered fuel storage tanks behind the assembly building (outfall 502, previously known as 701 but renumbered to correspond to the outfall number). Note that the permittee has eliminated outfall 501 (sanitary package plant).

Cooling Water - Monitoring of flow and heat rejected is required by the current permit. The data from the past permit term is included in **Attachment C**. Effluent limitations and monitoring requirements for this discharge are as follows:

Flow - no limitation, monitoring and reporting required.

Temperature (limited as Heat Rejected) - This discharge was included in the 316(a) variance study. The thermal loading limits proposed in the study have been retained in this permit. The limit is imposed as heat rejected in units of BTU/hr. The heat rejection is based on use of a chart (see **Attachment C**) that plots the load in MW's against the BTU's per hour to the river. The MW load of each unit is continuously recorded and the highest point in the month is read from the chart to obtain the maximum heat rejection per hour for the unit. The charts were based on condenser checks at different loads based on pounds of steam/KW. The limit for this outfall is 8.32×10^8 BTU/hr.

Note: pH limitations were removed in the 1996 modification. This is based on agency guidance for once-through noncontact cooling water effluent that is withdrawn from and discharged back to the same source. An evaluation of the cooling process found that no reasonable potential exists for the pH of the cooling water or the receiving water to be changed, even in the event of an equipment failure. In addition, the permittee has no control over the pH of the intake water and no reasonable remedy is available to the permittee if the intake water fails to meet the applicable water quality standard.

Toxics - The discharge must be evaluated to determine whether there is reasonable potential for the effluent to violate the Water Quality Standards adopted by the State Water Control Board (9 VAC 25-260 et. seq.). Effluent data from Form 2C were reviewed to determine whether the data are "suitable" to be used in the permit limit evaluation. The test for suitability is that the data must be above the respective quantification level (QL) and must represent the exact substance being evaluated. Chloride, copper, lead, silver, and zinc were detected in the discharge; however, total metals were reported (WQS are for dissolved metals) and, with the exception of silver, none were detected above the site specific quantification level for this discharge. Other parameters were detected but there have been no Water Quality Standards adopted by the Board for these parameters or they only apply to public water supplies. Therefore, no limitations are required. (Please see **Attachment C** for a tabulation of the data.)

16. Effluent Screening and Limitation Development (outfall 005 continued):

Storm water – Annual storm event monitoring (denoted as outfall 502) was required during the permit term for flow, TSS, and total recoverable zinc. Additional data was also provided as part of the storm water management special conditions and the permit application. This data is tabulated below. In order to determine whether the discharge has the potential to adversely affect the water quality of the receiving stream, the data were compared to the more stringent of the EPA benchmark values for storm water (as published in the Federal Register for the EPA multi-sector general permit and found in Attachment C) and the DEQ screening criteria established at two times the acute criteria in the Water Quality Standards. The comparison was made to evaluate whether sufficient Best Management Practices (BMPs) were in place at the facility to minimize contamination of storm water. It was found that TSS, zinc, iron, and whole effluent toxicity test results were above the respective screening criteria and/or benchmark value. (Note that the EPA benchmark values for metals are for the total while the DEQ screening criteria is for the dissolved form.)

In order to address the storm water quality issues at this outfall, APCO chose to re-route the storm water through the bottom ash treatment pond system (Outfall 004). It is expected that no storm water discharges will occur at outfall 502 up to the 10-year, 24-hour storm event. As such, the company has requested to maintain the outfall as an emergency storm water outfall with no monitoring requirements. The request will be honored; however, the drainage area for outfall must be addressed adequately in the Storm Water Pollution Prevention Plan. In addition, storm event data must be provided for all discharges of storm water from this outfall that do not receive treatment through the bottom ash ponds. This data is to be included in the annual storm water evaluation report.

Outfall 502 Data

	TSS (mg/l)	Zinc, TR (µg/l)	Oil & Grease (mg/l)	NO3-NO2 (mg/l)	Phosphorus (mg/l)	Chromium (µg/l)	Copper (µg/l)	Nickel (µg/l)	Iron (µg/l)
	125.2	221	<2	0.12	0.09	4.4	14.4	<10	607
	189.4	125							
	95	182							
	45.5	196							
	94.4	593							
EPA BM	100	117	15	0.68	2		63.6	1417	117
DEQ Criteria		170				840	18.38	260	170

Date	Test Species	LC ₅₀
August 23, 2005	<i>Ceriodaphnia dubia</i>	45.3%
	<i>Pimephales promelas</i>	> 100%
August 8, 2006	<i>Ceriodaphnia dubia</i>	> 100%
	<i>Pimephales promelas</i>	> 100%
July 24, 2007	<i>Ceriodaphnia dubia</i>	61.6%
	<i>Pimephales promelas</i>	> 100%
August 12, 2007	<i>Ceriodaphnia dubia</i>	22.9%
August 28, 2008	<i>Ceriodaphnia dubia</i>	78.8%
	<i>Pimephales promelas</i>	> 100%
DEQ Screening Criteria = 100% effluent		

16. Effluent Screening and Limitation Development (continued):

OUTFALL 006

The discharge from the fly ash pond flows to outfall 006. Fly ash is only transported to this pond when the dry collection system is down for maintenance or repairs. The pond has not been operating at full level during the past three permit terms (i.e. no discharge from the overflow weir) but there has been a low volume discharge at the outfall. It is believed to be seepage from the pond or underground springs. The permittee has indicated that this system will be closed out in the near future. However, this will not occur until after the permit is reissued. Therefore, limitations are maintained in this permit. The effluent limitations and monitoring requirements are as follows:

Flow – no limitation, monitoring and reporting required.

pH - Limitations are set in accordance with the Federal Effluent Guidelines and are in conformance with the water quality standards for this stream segment. Minimum - 6.0 s.u., maximum - 9.0 s.u. required.

TSS - Total suspended solids are limited by the Federal Effluent Guidelines for steam electric power generation. Fly ash transport wastewaters must meet a daily maximum of 100.0 mg/l and a monthly average of 30.0 mg/l.

Oil & Grease - Limitations are in accordance with the Federal Effluent Guidelines for stream electric power generation. A monthly average of 15.0 mg/l and a daily maximum of 20.0 mg/l are required.

Storm water - Only storm water from the immediate area is collected by the fly ash pond. Currently the pond is approximately 15 feet below the effluent overflow weir. The permit application states that the wet fly ash system will be closed out in the near future and the pond will not reach full level during this permit cycle. Due to the definition of storm water associated with industrial activity and the fact that the storm water is being treated the same as the fly ash transport water, storm event monitoring is not being included at this time.

OUTFALL 007

The sources of flow into the ash storage runoff pond include leachate collection and non-contact storm water runoff from the coal combustion by-products landfill. In the past, the ash from the plant's precipitators, if not sold or beneficially reused, was stored in the existing on-site landfill. The existing permitted landfill is at design capacity and in the process of being closed, but the company is in the process of applying for a solid waste permit to expand the existing landfill into the current auxiliary fly ash pond. The auxiliary fly ash pond was used in the past as an alternative wet fly ash pond whenever the dry collection system was inoperable. The Plant has voluntarily elected to decommission the wet fly ash system and eliminate Outfall 006 once the solid waste permit is approved for the landfill expansion over the auxiliary fly ash pond.

Water that percolates through the ash fill in the landfill is collected and conveyed to a leachate pond. Water is retained in this pond until it is manually pumped into the ash storage run-off pond as needed. Non-contact storm water from the landfill also is directed directly into the ash storage run-off pond. During construction and development of the lateral landfill expansion, storm water and leachate will be pumped to the leachate pond as performed during construction and development of the existing landfill.

16. Effluent Screening and Limitation Development (Outfall 007 continued):

Additionally, the Plant had proposed to construct a new landfill in West Virginia, known as the Adair Run Landfill, which has been permitted under a solid waste permit issued by the West Virginia Department of Environmental Protection. Construction of the Adair Run landfill has been put on hold indefinitely. Instead, as mentioned above, plans are to expand the current landfill into the auxiliary fly ash pond. Outfall 007 will continue to discharge treated leachate and storm water (via Outfall 907) from the current landfill and proposed landfill expansion.

The current permit limitations are based upon the Federal Effluent Guidelines for fly ash transport water and the Water Quality Standards. These limitations will be retained in the reissued permit as follows:

Flow – no limitation, monitoring and reporting required.

pH - Limitations are based on Effluent Guidelines and are in compliance with the water quality standards for this stream segment. A minimum of 6.0 s.u. and a maximum of 9.0 s.u. must be maintained.

TSS - A daily maximum of 100.0 mg/l and a monthly average of 30.0 mg/l is included as a BEJ limit based on the Federal Effluent Guidelines for fly ash transport water.

Oil & Grease - A daily maximum of 20.0 mg/l and a monthly average of 15.0 mg/l is included as a BEJ limit based on the Federal Effluent Guidelines for fly ash transport water.

Storm water - Storm water discharges from this area (denoted as outfall 907) are regulated as storm water associated with industrial activity. Storm event monitoring was required for flow, oil & grease, TSS, pH, and total recoverable copper, nickel, zinc, arsenic, and selenium. The results are tabulated below. In order to determine whether the discharge has the potential to adversely affect the water quality of the receiving stream, the data were compared to the more stringent of the EPA benchmark values for storm water (as published in the Federal Register for the EPA multi-sector general permit and found in Attachment C) and the DEQ screening criteria established at two times the acute criteria in the Water Quality Standards. The comparison was made to evaluate whether sufficient Best Management Practices (BMPs) were in place at the facility to minimize contamination of storm water. The effluent quality was better than the respective benchmark values and screening criteria. It is noted that the EPA benchmark values for metals are for the total rather than dissolved form.

Due to anti-backsliding requirements, annual monitoring must continue for parameters for which limitations applied in the current permit. This includes oil & grease, TSS and pH.

Outfall 907 Data

	TSS (mg/l)	pH s.u.	Oil & Grease (mg/l)	NO3-NO2 (mg/l)	Phosphorus (mg/l)	Chromium (µg/l)	Copper (µg/l)	Nickel (µg/l)	Iron (µg/l)	Zinc (µg/l)
	<QL	7.6	<QL	0.64	0.09	<1	<1	<2	166	5.6
	2.9	8	<QL							
	1.1	7.88	<QL							
	<QL	7.53	<QL							
	<1	7.53	<2							
BM	100	6-9	15	0.68	2	840	63.6	1417	1000	117
SC		6-9					18.8	260		170

16. Effluent Screening and Limitation Development (continued):

OUTFALL 008

The facility had proposed to construct a new landfill, known as the Adair Run Landfill, which has been permitted under a solid waste permit issued by the West Virginia Department of Environmental Protection. However, construction has been delayed indefinitely. Instead, the company is in the process of receiving a permit from DEQ for an expansion of the current landfill. Outfall 008 has not been used to date. The discharge from Outfall 008 will consist solely of non-contact runoff from a storm water management pond that collects runoff from the landfill expansion, including parts of the access road.

Because this outfall has not yet been built, no sampling data is available. The permittee will be required to submit a completed Form 2F once the landfill has become active.

OUTFALL 009

As noted for Outfall 008 above, the facility is in the process of receiving a permit from DEQ for an expansion to the existing on-site coal combustion by-product landfill. As a result of this expansion, a new outfall will be constructed which will convey non-contact storm water from the vegetated landfill cap and perimeter ditching. The outfall will discharge to roadside ditching along Elgood Mountain Road (Virginia S.R. 648) which then discharges to Adair Run. The maximum storm water discharge is projected to be 0.18 MGD. This outfall is not expected to be constructed for several years. The permittee will be required to submit a completed Form 2F once the landfill has become active.

OUTFALL 999

This is not a physical outfall, but rather a reporting requirement for the combined thermal discharges to the New River. The total thermal load from outfalls 001, 002, and 003 must be no more than 9.48×10^8 BTU/hr. The combined load is to be reported as outfall 999.

Basis for Effluent Limitations:

PARAMETER	BASIS
Heat Rejected (BTU/hr) (Outfalls 001, 002, 003, 005, 999)	5 - 316(a) variance
pH (Outfalls 004, 006, 007)	2, 1 - 40 CFR 423
TSS (Outfalls 004, 006, 007, 907)	1 - 40 CFR 423; Outfall 007/ 907 - 3
Oil & Grease (Outfalls 004, 006, 007, 907)	1 - 40 CFR 423; Outfall 007/907 - 3

1. Technology -based limits (federal effluent guidelines) - 40 CFR Part 423 (Steam Electric Power Generation)
2. Water Quality-based limits (show calculations or cite WQM plan reference)
3. Best Engineering Judgment (BEJ)-based limits
4. Best Professional Judgment (BPJ)-based limits (provide narrative rationale)
5. Other _____ 316(a) variance _____

17. Antibacksliding Statement:

All limitations are at least as stringent as the previous permit. The permit is in compliance with the antibacksliding policy.

18. Compliance Schedules: None

19. Special Conditions:

a. **Notification Levels**

Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-200 A for all manufacturing, commercial, mining, and silvicultural dischargers.

b. **O&M Manual Requirement**

Rationale: Required by Code of Virginia § 62.1-44.16; VPDES Permit Regulation, 9 VAC 25-31-190 E, and 40 CFR 122.41(e). These require proper operation and maintenance of the permitted facility. Compliance with an approved O&M manual ensures this. The manual shall detail the practices and procedures which will be followed to ensure compliance with the requirements of the permit, including treatment system design and operation, routine preventive maintenance, sampling and analysis techniques, and record keeping. It is noted that the facility has a previously approved Solids Management Plan which should also be incorporated into the O&M Manual.

c. **Materials Handling/Storage**

Rationale: 9 VAC 25-31-50 A prohibits the discharge of any wastes into State waters unless authorized by permit. Code of Virginia § 62.1-44.16 and 62.1-44.17 authorizes the Board to regulate the discharge of industrial waste or other waste.

d. **Compliance Reporting Under Part I.A**

Rationale: Authorized by VPDES Permit Regulation, 9 VAC 25-31-190 J 4 and 220 I. This condition is necessary when pollutants are monitored by the permittee and a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values.

e. **Sampling to Fulfill Form 2C Requirements**

Rationale: For outfall 006: Currently, there is no discharge from this outfall with the exception of some seepage from the fly ash pond and/or spring water and plans are to close out this outfall. However, should the wet sluicing of fly ash be returned to service such that an overflow occurs from the fly ash pond, the permittee must sample to meet the requirements of Form 2C.

f. **Sampling to Fulfill Form 2F Requirements**

Rationale: The facility is not able to comply with the Form 2F storm water sampling requirements for outfall 008 because the landfill and outfall have not yet been constructed. This special condition requires the permittee to sample and submit data from a storm event to fulfill the requirements of Form 2F within one year of completion of construction and commencement of discharge.

19. Special Conditions (continued):

g. **Discharge of Debris**

Rationale: This special condition prohibits debris from intake trash racks from being returned to the waterway. 9 VAC 25-31-220.K allows for implementation of Best Management Practices (BMPs) to carry out the purposes and intent of the State Water Control Law and the Clean Water Act.

h. **Discharge of Polychlorinated Biphenyl Compounds**

Rationale: Prohibits detectable discharge of PCBs (using EPA approved methods) as required by Federal Effluent Guidelines (40 CFR Part 423, Steam Electric Power Generating Point Source Category).

i. **Monitoring for Polychlorinated Biphenyl Compounds**

Rationale: State Water Control Law § 62.1-44.21 authorizes the Board to request information needed to determine the discharge's impact on State Waters. Development of a PCB Total Maximum Daily Load (TMDL) requires consideration of the Virginia water quality criterion for Total PCBs (9 VAC 25-260-140) to protect the "fishable" designated use (9 VAC 25-260-10). This special condition requires the permittee to monitor and report PCB concentrations in dry weather and wet weather effluent samples using low-level analysis using the most recent version of EPA's Method 1668. Since this method has not yet been promulgated by EPA, the results from this monitoring will be used to support the development of the PCB Total Maximum Daily Load (TMDL) for the New River and will not be used for compliance purposes. (Reference TMDL Guidance Memo No. 09-2001)

j. **TMDL Reopener**

Rationale: Section 303(d) of the Clean Water Act requires that Total Maximum Daily Loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The re-opener recognizes that, according to Section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act.

k. **316(a) Variance**

Rationale: Based on a comment received from EPA during the last reissuance process, the permittee is required to re-submit the information necessary to support the 316(a) variance (alternative thermal effluent limitations). Details regarding 316(a) variances can be found in 40 CFR 125, Subpart H – Criteria for Determining Alternative Effluent Limitations Under Section 316(a) of the Act. At a minimum, the permittee should verify that the plant operating conditions and load factors are unchanged from the original variance request and are expected to remain so for the duration of the permit term; that there have been no changes to the plant discharges or other discharges in the vicinity of the plant site that could interact with the thermal discharges; and verify that there have been no known changes to the biotic community of the receiving water body that would impact the previous 316(a) determinations.

l. **316(b) Determination**

Rationale: The facility includes a cooling water intake structure governed by §316(b) of the Clean Water Act which requires that the location, design, construction and capacity of the cooling water intake structures reflect the "best technology available for minimizing adverse environmental impact". The April 2005 environmental report on impingement and entrainment studies conducted at the facility indicated minimal or no adverse environmental

19. Special Conditions:

l. **316(b) Determination (continued)**

impact. The special condition requires continued compliance with §316(b) and submittal of new data that was recently collected in response to EPA's Phase II requirements. Collected data and any changes to the intake structures or conditions will be reevaluated at each reissuance to monitor continued compliance with the requirement. The condition also includes a reopener, should further 316(b) related conditions become necessary once the EPA Phase II rule is finalized or a new BPJ determination is required.

m. **Toxics Management Program**

Rationale: VPDES Permit Regulation, 9 VAC 25-31-210 and 220 I, requires monitoring in the permit to provide for and assure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act.

Outfalls 004 and 007

The current permit required biological toxicity testing on the effluent from outfall 004 and 007 once during the permit term. Acute and chronic testing was required at outfall 004 using *Ceriodaphnia dubia*. Storm event testing at outfall 007 (Outfall 907) was performed with *Ceriodaphnia dubia*. (Previous permits also required annual or semiannual testing with *Ceriodaphnia dubia* and/or *Pimephales promelas*.) The data from the past fifteen years is presented in **Attachment C**.

If an effluent has been shown to demonstrate actual or potential toxicity, a Whole Effluent Toxicity (WET) limit is required. The WETLIM10 spreadsheet was used to calculate the appropriate wasteload allocations and test endpoints for each outfall. If limits were required, they would be as follows:

Outfall 004: acute: 3.2 TU_a (LC₅₀ = 31%); chronic: 25 TU_c (NOEC = 4%)

Outfall 907: acute: 11.1 TU_a (LC₅₀ = 9%)

Comparing the results to the endpoints listed above, it is believed that there is not a reasonable potential for toxicity and no limitations are required. For major industrial facilities where no limit is needed, the guidance recommends that annual monitoring with both a vertebrate and invertebrate species be considered. However, based upon the past fifteen years of data and the low variability of the effluent, it is believed that no further monitoring is necessary at this time. If the facility undergoes any changes that would alter the effluent characterization, then a new evaluation will need to be performed.

Outfall 006

As in the current permit, should the wet fly ash transport system be used such that an overflow discharge occurs, quarterly acute and chronic toxicity testing will be required using both *Ceriodaphnia dubia* and *Pimephales promelas*. The test type and frequency are in accordance with Guidance Memo No. 00-2012. Any data generated will be used to determine the need for a permit limit at the next reissuance.

n. **Storm Water Management Evaluation**

Rationale: The Clean Water Act 402(p)(2)(B) requires permits for storm water discharges associated with industrial activity. VPDES permits for storm water discharges must establish Best Available Technology/Best Conventional Technology (BAT/BCT) requirements in accordance with 402(p)(3) of the Act. The Storm Water Pollution Prevention Plan is the

19. Special Conditions:

n. **Storm Water Management Evaluation (continued):**

vehicle proposed by EPA in the final NPDES General Permits for Storm Water Discharges Associated with Industrial Activity (Federal Register Sept 9, 1992) to meet the requirements of the Act. Additionally, 9 VAC 25-31-220 K allows BMPs for the control of toxic pollutants listed in Section 307 (a) (1), and hazardous substances listed in Section 311, of the Clean Water Act, where numeric limits are infeasible or BMPs are needed to accomplish the purpose/intent of the law.

This special condition requires that the SWPPP be developed and maintained in accordance with the Part I.F. (described in 19.m. below) of the permit. The effectiveness of the Plan will be evaluated via quarterly or annual monitoring for those parameters listed in Part I.A. of this permit. As discussed in Section 16. above, the decision criteria will be used as a screening tool when evaluating the data and effectiveness of the SWPPP. The permittee shall use this information to guide its review of the Plan and implement appropriate changes as necessary. An annual report is required and shall include a summary of data collected the previous year and the status of the SWPPP to maintain pollutant concentrations below the benchmark values. In summary, the pollutants of concern and the corresponding decision criteria are as follows:

<u>Pollutant of Concern</u>	<u>Decision Criteria</u>	<u>Basis</u>
Zinc (Total)	117 µg/l	EPA Benchmark

It is noted that the toxicity screening element of the Storm Water Management Evaluation special condition has been removed from this permit based on a review of the data from the previous permit term. All samples from outfall 901 resulted in an LC50 < 100%. It is believed that no further biological toxicity testing is necessary at this time. In addition, the discharge from Outfall 502 has been eliminated up to a 10-year, 24-hour storm event. The permittee must continue to include this drainage area in the SWPPP and record the storm event data for any discharge from the outfall and provide such data in the annual report.

o. **Storm Water Management**

Rationale: VPDES Permit Regulation 9 VAC 25-31-10 defines discharges of storm water from industrial activity in nine industrial categories. 9 VAC 25-31-120 requires a permit for these discharges. The Storm Water Pollution Plan requirements of the permit are derived from the VPDES general permit for discharges of storm water associated with industrial activity, 9 VAC 25-151-10 et seq. VPDES Permit Regulation, 9 VAC 25-31-220 K, requires the use of best management practices where applicable to control or abate the discharge of pollutants when numeric effluent limitations are infeasible or the practices are necessary to achieve effluent limit or to carry out the purpose and intent of the Clean Water Act and State Water Control Law.

The storm water management requirements of the permit are divided into three sections: General Storm Water Special Conditions, General Storm Water Pollution Prevention Plan Requirements, and Sector-Specific Storm Water Pollution Prevention Plan Requirements.

p. **Part II, Conditions Applicable to All Permits**

Rationale: VPDES Permit Regulation, 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

20. NPDES Permit Rating Work Sheet: Total Score 600

Please see **Attachment A** for completed rating work sheet. There have been no changes since the last permit reissuance.

21. Changes to Permit:

Changes in Effluent Monitoring/Limitations:

Outfall No.	Parameter Changed	Monitoring Requirement Changed		Effluent Limits Changed		Reason	Date
		From	To	From	To		
901 (SW)	Nickel	1/3M	None	-----	-----	Eliminated monitoring (no limit) based on review of past data in accordance with agency guidance.	5/27/09
502 (SW)	Flow, TSS, Zinc	1/Year	None	-----	-----	Eliminated monitoring because storm water has been routed to outfall 004 up to a 10-year, 24-hour storm event	5/27/09
009 (SW)	NA	NA	NA	NA	NA	Added outfall that is expected to be constructed after expansion of landfill	7/09/09

Changes to Special Conditions:

O&M Manual Requirement – Updated to reflect current language in the VPDES Permit Manual.

Compliance Reporting Under Part 1.A – Updated to reflect current language in the VPDES Permit Manual; added language for use of significant digits.

Sampling to Fulfill Form 2F Requirements – Amended to require sampling within one year of commencement of discharge from outfalls 008 and 009.

Monitoring for Polychlorinated Biphenyl Compounds – Added. Data collected will be used to support development of the PCB TMDL for the New River per TMDL Guidance Memo No. 09-2001.

TMDL Reopener – Added. The receiving stream is listed on the 303(d) impaired waters list. The reopener allows the permit to be modified if /when a TMDL is approved.

316(a) Variance – Added. As a result of a comment from EPA during the last permit reissuance, the permittee is being required to assemble and re-submit information to support the 316(a) variance, which allows for alternative thermal discharge limits at the facility.

316(b) Determination – added. As a result of EPA comments on the draft permit, this special condition regarding compliance with 316(b) requirements for cooling water intake structures was added.

Changes to Special Conditions (continued):

Toxics Management Program – Amended. Monitoring of Whole Effluent Toxicity at outfalls 004 and 007/907 has been removed from the permit. The previous permit required testing once per permit term. Historic data over the past 15 years has been reviewed and based on the results and low variability in the effluent, it is believed that further monitoring is unnecessary. Monitoring for Outfall 006 remains unchanged.

Storm Water Management – Updated. Storm Water Management Evaluation language has been updated based on current review of the available data. Requirements for outfall 502 have been changed to reflect that this storm water has been routed to the bottom ash pond system for treatment. No discharge is expected up to a 10-year-24-hour storm. The permittee must provide storm event data for any discharge from outfall 502 in the annual storm water report. Also, the Storm Water Pollution Prevention Plan language has been updated to reflect changes in the VPDES Permit Manual and General Permit regulation.

22. Variances/Alternate Limits or Conditions:

In 1977, APCO requested and was granted a variance under Section 316(a) of the Clean Water Act. This variance required a study of the impact of the thermal discharges from the facility on the receiving waters. The granting of the variance resulted in a total thermal loading limit for the New River (reported as outfall 999) and a thermal loading limit for the East River (outfall 005) instead of “end-of-pipe” limitations at each cooling water discharge. The permittee has indicated that the conditions under which the variance was granted have not changed. Therefore, the permit limitations for thermal discharges will remain as in the current permit. However, this permit includes a special condition to resubmit information necessary to support the variance as requested by EPA during the previous permit reissuance process.

The facility was also granted a variance under Clean Water Act Section 316(b) concerning the intake structure. This variance has been continued.

The rationale for each of these variances is included in **Attachment C**.

The facility was considered for reducing monitoring frequencies. Because Warning Letters have been issued to the facility in the past three years, reducing monitoring frequencies were not considered. (W2006-09-W-1001, W2007-01-W-1002, W2007-05-W-1001, W2008-09-W-1002, W2008-10-W1001, W2009-01-W1001). See **Attachment C** for listing of warning letters.

23. Public Notice Information required by 9 VAC 25-31-280 B:

All pertinent information is on file and may be inspected or copied by contacting Lynn V. Wise at:

Virginia DEQ, West Central Regional Office
3019 Peters Creek Road,
Roanoke, VA 24019
Telephone No. (540) 562-6787
E-mail lynn.wise@deq.state.va.us

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for

23. Public Notice Information required by 9 VAC 25-31-280 B (continued):

comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing if public response is significant. Requests for public hearings shall state the reason why a hearing is requested, the nature of the issues proposed to be raised in the public hearing and a brief explanation of how the requester's interests would be directly and adversely affected by the proposed permit action. Following the comment period, the Board will make a determination regarding the proposed issuance. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given.

23. Additional Comments:

Previous Board Action: None.

Staff Comments:

Comments on the draft permit were received from EPA and the permittee. A copy of the comments and DEQ's response are included in the permit files. Significant changes are documented in Section 21 above.

Public Comment:

No public comments were received during the comment period.

24. 303(d) Listed Segments (TMDL):

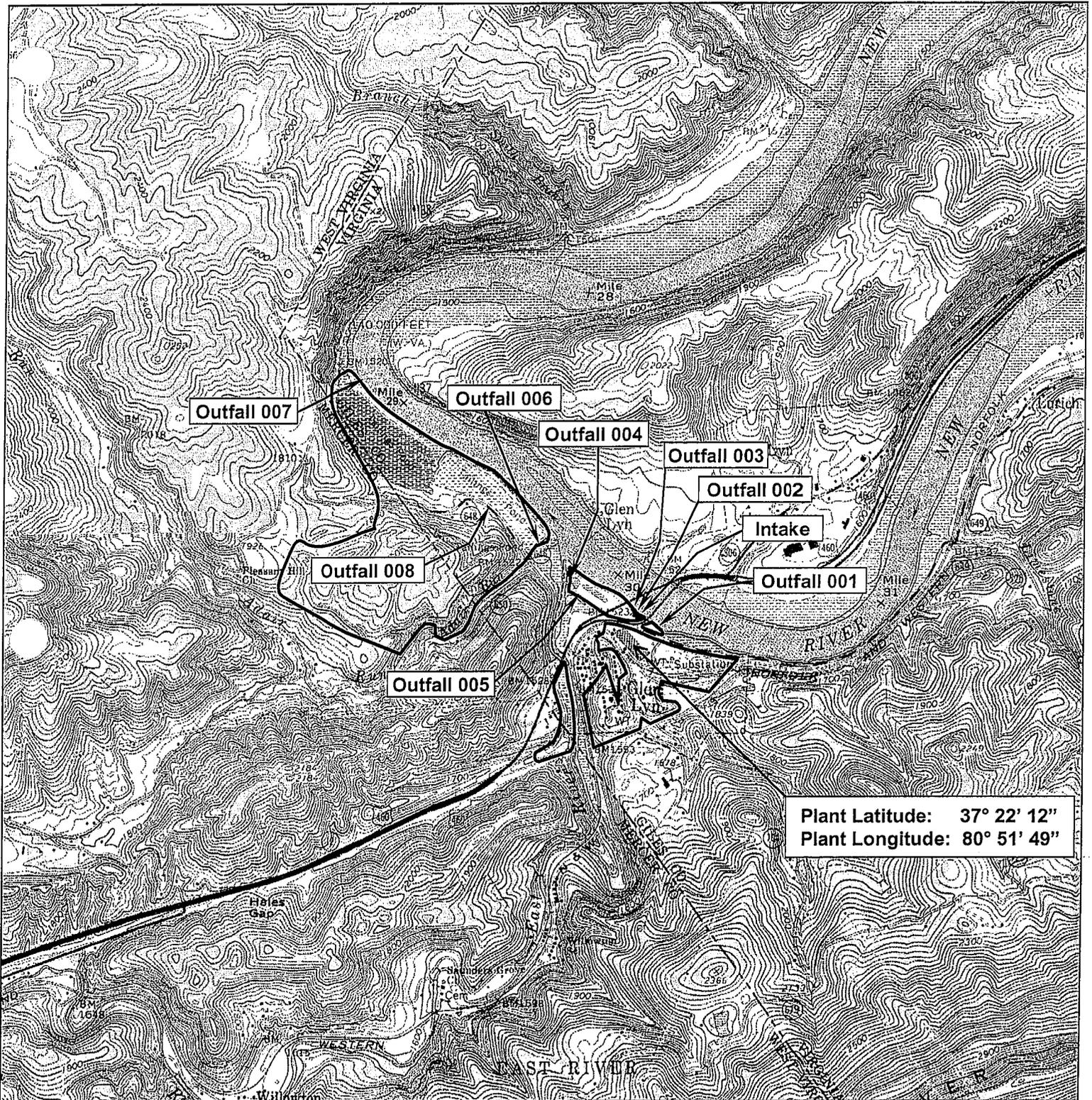
This facility discharges directly to the New River. The 2008 303(d) report lists the segment of the New River into which the APCO facility discharges as impaired beginning at the I-77 Bridge and extending downstream to the VA/WV State line for not meeting the fish consumption use. The Virginia Department of Health (VDH) issued a fish consumption advisory on August 6, 2001 for polychlorinated biphenyls (PCBs) for the lower portion of the New River (Rt. 114 Bridge downstream to the VA/WV State Line – 52 miles) based on fish tissue collections from carp. An Advisory extension to Claytor dam was issued 08/06/2003 (11.47 miles) recommending that no carp be consumed from these waters and that no more than two meals per month of flathead and channel catfish should be consumed. The PCB Fish Consumption Advisory was further extended upstream on the New River to the I-77 Bridge to include the lower portions of Peak Creek, Reed Creek, and Claytor Lake on 12/02/2004. The VDH advises consumption should not exceed two meals per month for carp and smallmouth bass. The VDH level of concern is 50 parts per billion (ppb) in fish tissue. There are eight fish tissues collection sites reporting exceedances of the WQS based 54 ppb fish tissue value (TV). The impairment source is unknown. A copy of the 2008 Impaired Waters Fact Sheet may be found in **Attachment B**.

A TMDL has not been prepared or approved for the segment. This permit has monitoring requirements for polychlorinated biphenyl compounds in support of TMDL development. It is unknown whether the approved TMDL will contain a wasteload allocation for this discharge. The permit contains a re-opener condition that may allow limits to be incorporated into the permit in compliance with section 303(d)(4) of the Act once a TMDL is approved.

ATTACHMENT A
GENERAL INFORMATION

1. Location Topographic Map
2. Schematic Diagram
3. Site Visit Memo and Additional
Application Information
4. Storm Water Drainage Area Maps
5. Significant Materials Stored
6. NPDES Permit Rating Worksheet

Figure 1



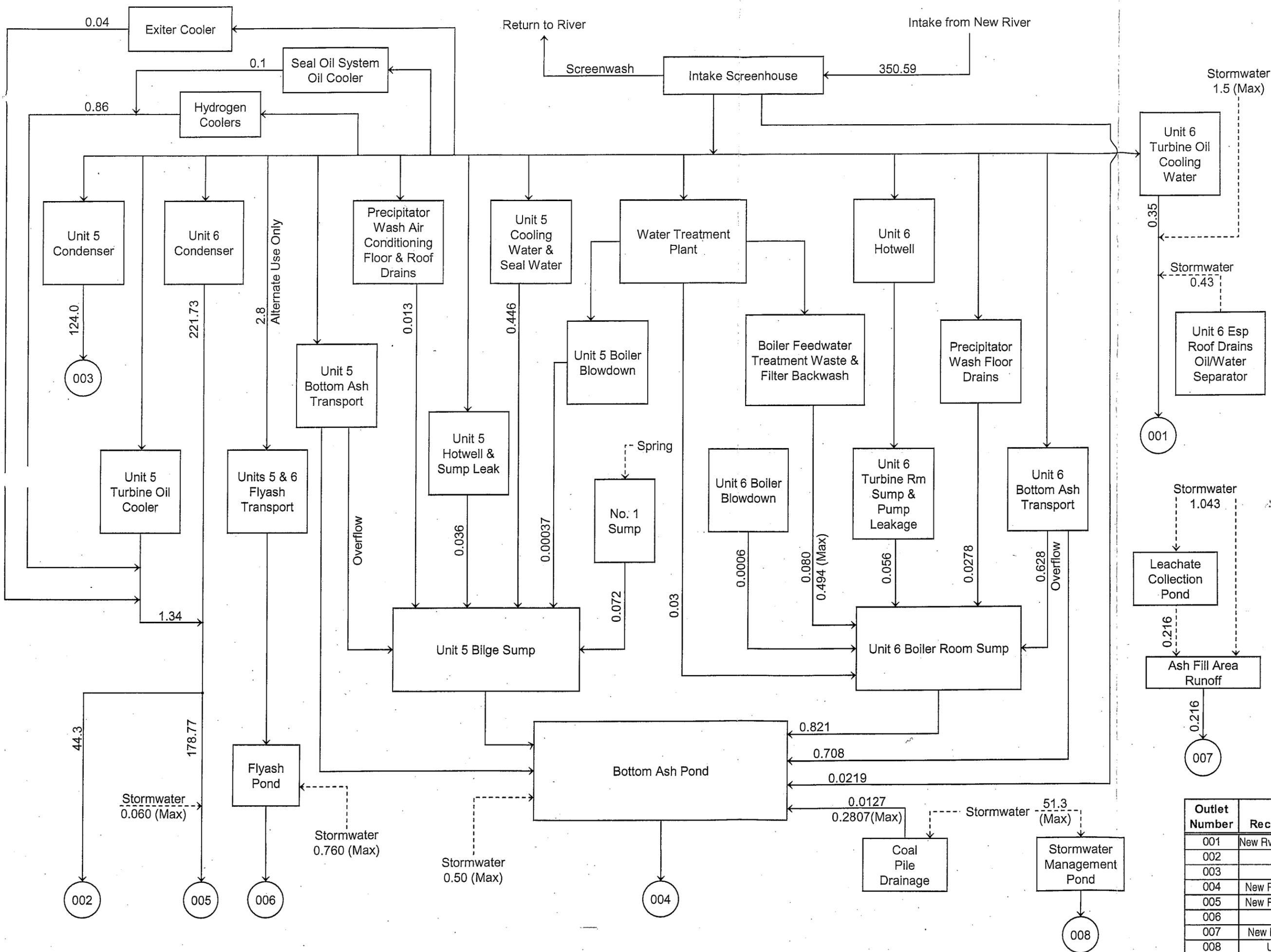
  *Narrows, VA / Leron, Oakville,
& Peterson, WVA Quadrangles*
USGS Topographic Map
— Plant Property Boundary

Appalachian Power Company
Glen Lyn Plant
VPDES Permit No. VA0000370
USGS Site Location Map

0 1/2 1mi

12.31.08

Water & Ecological
Resource Services 



LEGEND

- Supply Water
- - - Waste Water
- ### Outlet Number

All flows measured in million gallons per day (MGD)

12.15.08

Appalachian Power Co.
Glen Lyn Plant

Water Usage Flow Diagram
Units 5 & 6

Water & Ecological Resource Services

Outlet Number	Receiving Water	Average Flow	Maximum Flow
001	New Rv - via Ginny Hollow	0.35	2.28
002	New River	44.3	
003	New River	124.0	
004	New Rv - via East River	2.98	4.17
005	New Rv - via East River	178.77	178.83
006	New River	0.00396	3.564
007	New River - Intermittant	0.216	1.274
008	UT Adair Run	-	11.63

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY Water Regional Office

3019 Peters Creek Road

Roanoke, VA 24019

SUBJECT: APCO - Glen Lyn Site Visit; Permit No. VA0000370

TO: File

FROM: Lynn V. Wise, Environmental Engineer, Sr. *LW*

DATE: May 14, 2009

COPIES:

A site visit to the referenced facility was conducted on May 13, 2009. Present at the inspection were Mr. Jon Magalski, Environmental Specialist, and Mr. Joe Ryder, Environmental Coordinator, of American Electric Power. The outfalls, treatment systems, and storm water drainage areas were inspected to clarify and verify the permit application.

The facility consists of one 90 Mw and one 240 Mw coal-fired unit (#5 and #6) for the generation of electricity. Each unit has once through cooling water and electrostatic precipitators for fly ash collection. Other sources of wastewater are bottom ash sluicing, storm water associated with industrial activity, and "low volume waste sources" as defined by the Code of Federal Regulations (40 CFR, Part 423).

Discharge from **outfall 001** contains once through non-contact cooling water from the Unit #6 turbine oil cooler and the majority of the storm water run-off from the plant site. The discharge flows into an underground tunnel (Ginny Hollow) which enters the New River. There is no flow onto the facility's property through Ginny Hollow except during wet weather when run-off from adjacent land is naturally channeled into the hollow. There are several drop inlets in the plant area that drain to 001. Along with fugitive coal dust, there are various materials stored on site with the potential to contaminate storm water. These include: structural steel components, scrap metal, wooden pallets, lube oil, maintenance equipment, asbestos piping, and above and below ground storage tanks. The largest of the storage tanks is a 500,000-gallon fuel oil tank; however, the company is in the process of closing out this tank including remediation of the surrounding soil. There is also a 365,000 gallon tank that was previously used for mineral oil storage that is now being used for fuel oil storage. These are located in the same area and are surrounded by an earthen berm, which retains storm water. The transfer area where unloading of tanker trucks occurs is not inside this berm, but is equipped with a catch basin under the valves and a sump under a drop inlet on the concrete pad to reduce potential storm water contamination. The sump is pumped out by Necessary Oil when needed or the oil/water can be pumped out into empty drums for disposal as used oil.

Once-through noncontact cooling water (screened intake water from the New River) is the sole source of discharge for **outfalls 002, 003 and 005** with the exception of a storm water drop inlet from the paved parking area in front of the plant entrance (**outfall 502**) which would discharge to **outfall 005** in the case of a storm larger than a 10-year, 24-hour storm event. Otherwise, the storm water is routed through the bottom ash ponds and is discharged through **outfall 004**. This drop inlet also collects run-off from the roof drains of the employee assembly building in front of the plant and drainage from the secondary containment dike from the covered fuel oil storage tanks located behind this building. In the event any storm water should accumulate in the dike, it would be manually drained after visual inspection.

Outfall 004 results from the discharge of the bottom ash treatment ponds. The water transport system for the bottom ash and all of the low volume waste sources in the facility are directed to this treatment system. Polymers are added on an as needed basis. There are two bottom ash ponds with one being operational at a time. The pond usage is alternated about every six months. In addition to the storm water that falls directly on the bottom ash pond area, roof drains from the main plant buildings flow into this treatment system. There are also drainage pipes from the Route 460 bridge that drop onto the bottom ash pond area. Discharge from the bottom ash pond flows into a polishing pond for further treatment before the final outfall.

When the bottom ash pond is taken out of service (the solids reach a certain level), the water is allowed to sit for a time for solids to settle and the pond is decanted. The pond is excavated (by an outside contractor) and the solids are sold or disposed of in the onsite landfill. This discharge flows to the East River (a tributary to the New River).

The fly ash pond discharging to **outfall 006** is used on an intermittent basis. The wet collection system for fly ash was removed from the plant over twenty years ago. On occasion, the dry collection system is down and wet sluicing must be used. In the past, this would occur for about one to two days at a time, or seven to ten days per year; however, plans are to take this system completely out of service. The pond has a maximum operating depth of 32 feet. At the time of the inspection, the water level was approximately fifteen feet below the effluent weir (there was approximately five feet of water standing in the lower end of the pond). However, inspection of the outfall showed a slow trickle from the pipe. This is believed to be the result of seepage through the dike or groundwater. There was no evidence of any recent large discharges from the pipe. The pond also collects storm water that falls on the pond area. As noted, this outfall will be blocked and the pond system taken out of service. At that time, the permit may be modified to remove the outfall.

In the past, the pond discharging to **outfall 007** was used for treatment of the fly ash sluice in the same manner as the fly ash pond leading to outfall 006. With the introduction of the dry collection system, the pond became the method used to collect storm water runoff from the landfill area. Contact (active fill area and leachate) and noncontact storm water was collected when the landfill was active, but the landfill has been closed. Leachate is collected and treated in a separate pond before being pumped into the runoff collection pond, as needed. Storm water from the surrounding area runs in roadside ditches into the runoff collection pond. Although not common, truck rinse water is also collected. It was anticipated that a new landfill would be constructed in West Virginia. The landfill has been permitted, but no construction activity has occurred. Instead, the company plans to expand the current landfill into the area where the fly ash pond currently sits. One additional outfall, **008**, was added during the previous permit cycle, but it was never used. Instead, the outfall is being relocated to address storm water runoff from the expanded landfill. Mr. Magalski indicated that he would submit new drawings showing the location of the outfall. The discharge from 008 will be to an unnamed tributary of Adair run and consist solely of noncontact runoff from a storm water management pond. The expansion has not yet been permitted by DEQ and it is unlikely that there will be any discharge from this outfall during the next permit term.

Note 1: ITEM II – ADDITIONAL INFORMATION AND NOTES

The wastewater and stormwater flow values that are listed on Form 2C-II.B and on the VPDES Water Balance Diagram (Figure 2) are representative of facility operation at full load under normal conditions. The generation at this facility is dependent on the consumer demand and availability of operating capacity to satisfy that demand. Limitations on flows could restrict the Company's ability to operate the facility at full load, thereby de-rating the capacity of the facility. These values do not represent maximum design capacity. Factors of redundant equipment and extraordinary operations were not considered in the calculation of the listed flows, since they are not part of normal operation.

Intake Structure

The river water intake structure is located on the west shore of the New River, just upstream of the U.S. Route 460 bridge, approximately 100 yards from the plant. The intake structure consists of two separate operating intakes that supply process and cooling water for Units 5 and 6, respectively. The Unit 6 intake is upstream of the Unit 5 intake, and they are separated by the inoperative intake tunnels that formerly supplied retired generating Units 2, 3, and 4.

Each intake system has a screening system to protect the pumps from debris in the river. Each screening system consists of three components. The first component is the sluice gates that form a skimmer wall at the openings of each intake tunnel. These gates serve to keep floating debris from entering the intake, and can also be used to close the intake tunnels should repairs be necessary. Coarse debris that passes by the skimmer walls is removed by the trash grills, which are a series of vertical bars spaced approximately three inches apart. The trash grills are periodically cleaned using manually controlled trash rakes. The trash rakes physically remove debris from the grills for proper disposal.

The third component of the screening system is a series of vertical traveling screens. Each unit is served by four sets of screens. The screens consist of framed panels (2 ft. x 6 ft. on Unit 5 and 2 ft. x 8 ft. on Unit 6) that hold 3/8-in² copper mesh screen. Leaves, twigs, debris, and organisms that pass through the trash grills may be impinged on the screens. The screens are periodically rotated (automatically based on pressure differential across the screen, or manually) and flushed with water using a high-pressure spray to remove impinged material. The spray flushes the dislodged materials into troughs (one for each unit) that carry the materials back to the New River. The Company does not believe that this screen backwash constitutes a discharge or addition of pollutants to navigable waters, as contemplated by the Clean Water Act, but represents a return of natural materials to the river.

During winter months, ice accumulating on the trash grills can reduce the volume of water passing through the screening system. To alleviate this condition, a

portion of the heated water from the discharge side of the cooling water condensers is routed to the front of the intake structure to melt the ice.

Outfall 001

Water discharged via Outfall 001 (Ginny Hollow) consists of once-through cooling water for the Unit 6 turbine oil lubrication system and stormwater runoff. The lubrication system operates at a lower pressure than that of the surrounding cooling water, such that any leaks will normally result in cooling water entering the lubricating system, rather than the reverse.

The stormwater portion of the outfall consists of runoff from the plant yard area southeast of the general office building to the coal yard (see Stormwater Drainage Maps section for depiction of this area). Drainage from the coal yard is collected and pumped to the bottom ash ponds. The Ginny Hollow discharge tunnel, which runs underground along the entire length of the plant property, also conveys stormwater collected from a portion of the Town of Glen Lyn, located uphill and west of Glen Lyn Plant. Glen Lyn Plant's drainage area contribution to Ginny Hollow consists of approximately 14 acres, including 1 acre of paved road, 3 acres of graveled or plant roadways, 4.5 acres of graveled substation, and 5.5 acres of vegetated land. Glen Lyn Plant periodically uses Accord®, Arsenal®, glyphosate-based or other EPA approved herbicides to control vegetation in the drainage area to this outfall.

Outfall 002

The Unit 6 condenser cooling water system utilizes New River water to condense the steam used to drive the turbines involved in generation of electricity. The resulting heated water is released back to the New River through two separate discharges. Approximately 20% of the water is discharged through Outfall 002, located just downstream of the plant intake structure. The remaining 80% is routed through a separate concrete tunnel to an open channel leading to the East River (Outfall 005) just upstream of its confluence with the New River. There are no stormwater contributions to Outfall 002.

Flows routed to these two discharges cannot be measured directly, but have been estimated based on the relative size of the discharge tunnels. These estimates have been used for Discharge Monitoring Reports submitted to date under the plant's VPDES permit.

Outfall 003

Unit 5 condenser cooling water discharges to the New River through Outfall 003 via an underground tunnel located downstream of the plant intake. The entire discharge outlet is under the water surface at the normal pool level of the New

River, making collection of samples difficult. There are no stormwater contributions to this discharge.

Outfall 004

The bottom ash/wastewater treatment pond system consists of two primary treatment ponds discharging to a clearwater pond, which in turn discharges to the East River via Outfall 004, located just upstream of the East River confluence with the New River. The ponds are located northwest of the plant, with a portion of the ponds located underneath the U. S. Route 460 bridge which crosses the New River. Only one primary bottom ash/wastewater treatment pond is in service at any given time.

General plant wastewater, including those waste streams specifically classified as low-volume wastes in the Steam Electric Effluent Guidelines (40 CFR Part 423), stormwater, and bottom ash are routed to one of the primary treatment ponds for settling and self-neutralization. The supernatant from the ponds decant to the clearwater pond for final clarification before being discharged to the East River. A skimmer is located at the overflow structure to retain any floating solids or other material. Because of the varying settle-ability characteristics of the ash, the facility may add a polymer to aid settling. Polymer additions are performed only on an 'as-needed' basis. Settled material in each primary treatment pond is excavated while the other pond is in service. The excavated bottom ash is beneficially reused or disposed in the on-site coal combustion by-product landfill. The dikes of the ponds are sprayed annually in the spring with Escort® herbicide or other EPA approved herbicide to control woody stem vegetation.

Both primary treatment ponds are 1.5 acres in size, and have maximum operating depths of 8 feet. The retention time within a pond at full load operating conditions is approximately 1.5 days. When the volume of settled materials in the pond reaches a level where the pond no longer provides adequate retention time to allow sufficient settling, the pond is removed from service, and the adjacent pond is placed into service. The out-of-service pond is allowed to remain quiescent for a period of time to allow further settling, and is then dewatered to the in-service pond using a portable pump. Depending on the coal quality and the plant production schedule, a primary treatment pond remains in service approximately 3 months.

Additional flow to the pond system includes stormwater runoff from the roof drains of the main generation building, roof drains from the Unit 5 electrostatic precipitator, surface runoff from land adjacent to the ponds and access road, and water collected at the coal yard. Coal yard runoff is collected using a french drain system, perimeter drain system, collection sump, and pumping system with automatic controls triggered by the water level in the sump. The total area of stormwater drainage includes 16.7 acres (see Stormwater Drainage Maps section for depiction of this area). This area includes 7 acres for the coal yard, 2.7 acres

of roof drains, 3.4 acres of adjacent plant property, and 3.6 acres of direct precipitation to the ponds. Additionally, as discussed in Appendix B, stormwater runoff from the area designated as Outfall 502 has been diverted to the bottom ash/wastewater treatment ponds. All stormwater from this drainage area up to the 10-year, 24-hour storm will drain to these ponds. Also, as discussed in Appendix B, the secondary containment sump for the 500,000 and 365,000 gallon fuel oil tanks have been diverted to the bottom ash/wastewater treatment ponds. Finally, a small portion of the drainage off the U.S. Route 460 bridge also drains into the bottom ash/wastewater treatment ponds, but this runoff is negligible compared to the over flow from Outfall 004.

Outfall 005

The Unit 6 condenser cooling water system utilizes New River water to condense the steam used to drive the turbines that generate electricity. The resulting heated water is released back to the New River through two separate discharges. Approximately 20% of the flow is discharged through Outfall 002. The remaining 80% is routed through a separate underground tunnel into a manmade channel that flows into the East River via Outfall 005, located just upstream of the New River confluence. Flows routed to these two discharges cannot be measured directly, but have been estimated based on the relative sizes of the discharge tunnels. These estimates have been used for Discharge Monitoring Reports submitted to date under the plant's VPDES permit.

Stormwater contributions to this outfall include excess runoff from approximately a 10-year, 24-hour storm event as discussed in Appendix B for Outfall 502.

Glen Lyn Plant periodically uses Accord®, Arsenal®, glyphosate-based or other EPA approved herbicides to control vegetation in the drainage area to this outfall.

Outfall 006

The auxiliary fly ash pond associated with Outfall 006 is used as an alternate and backup to the dry ash handling system and landfill disposal. The wet system is infrequently used when the dry system experiences an outage. The auxiliary fly ash pond is currently approximately 7 acres in size, with a maximum operating depth of 32 feet. The existing weir directs flow from the pond to the discharge structure leading to Outfall 006 which discharges to Adair Run. Except for rainfall and the periodic use for sluicing ash while the dry ash system has an outage, there are no flow sources to this pond. The current operating level within the pond is 15 feet below the skimmer elevation. Consequently, the potential for a discharge through the weir is negligible and has not occurred over the current permit term. There is a discharge averaging about 520 gallons/day at the outfall that is thought to be groundwater or seepage from the dike. The water level within the pond is below the elevation of the discharge piping. Stormwater drainage for this outfall is currently approximately 11 acres. The inboard dikes of the pond are

sprayed annually in the spring with Escort® herbicide or other EPA approved herbicide to control woody stem vegetation.

Approximately 5 acres of the auxiliary fly ash pond is proposed for lateral expansion of the existing coal combustion by-products landfill. This will result in approximately 2 acres of the auxiliary fly ash pond remaining and will be utilized as such whenever the dry fly ash handling system is inoperable. This will require the reduced auxiliary fly ash to be rebuilt, including a liner system. Additionally, the outlet structure from the pond has been redesigned and configured to discharge to the New River, a much higher flow receiving stream than Adair Run. The location of relocated Outfall 006 will be at Latitude: 37°22'31.5" / Longitude: 80°52'5". If and when the reconfigured auxiliary fly ash pond is utilized, the pond will be allowed to drain from the surface via a faircloth skimmer to a manhole on the outside of the dike. The manhole will be valved allowing for the sampling prior to being discharged to the New River. Once the pond is dewatered, the fly ash will be dredged and disposed of in the adjacent landfill.

During construction of the lateral landfill expansion and reduced fly ash pond, stormwater collected in lower end of the auxiliary fly ash pond will be manually pumped to the Outfall 007 collection pond. Leachate collected in the lateral landfill expansion will be collected in a sump between the landfill expansion and reduced auxiliary fly ash pond, and pump to the Outfall 007 collection pond. It is not anticipated that the effluent flow or quality discharged via relocated Outfall 006 or Outfall 007 will change as a result of the proposed lateral landfill expansion and reduction of the auxiliary fly ash pond. The effluent flow from Outfall 006 is projected to remain at approximately 2.8 MGD, if discharging. However, such operation of the auxiliary fly ash pond would likely require polymer addition on an 'as needed' basis similar to what is used for the bottom ash ponds to assist the settling of the ash in order to meet the 30 mg/L monthly average and 100 mg/L daily maximum for total suspended solids. Details of the proposed reduction of the auxiliary fly ash pond, liner system, new outlet structure and location of relocated Outfall 006 are shown on Drawings 56-30255-04-B, 56-30255-7-B and 56-30255-10-B provided at the end of this appendix. Approval for expansion of the landfill is currently being pursued through the Solid Waste Division at DEQ.

Outfall 007

The ash collected in the electrostatic precipitators is removed from the plant as a dry product and transported by truck to the coal combustion by-product landfill at the plant, if not sold or beneficially reused in an approved manner. The landfill is located in the area between the auxiliary fly ash pond and the Outfall 007 runoff pond (see Stormwater Drainage Maps section for depiction of this area). The Outfall 007 runoff pond is used to collect stormwater runoff from the around landfill, as well as contact water from the coal combustion by-product landfill from the leachate pond.

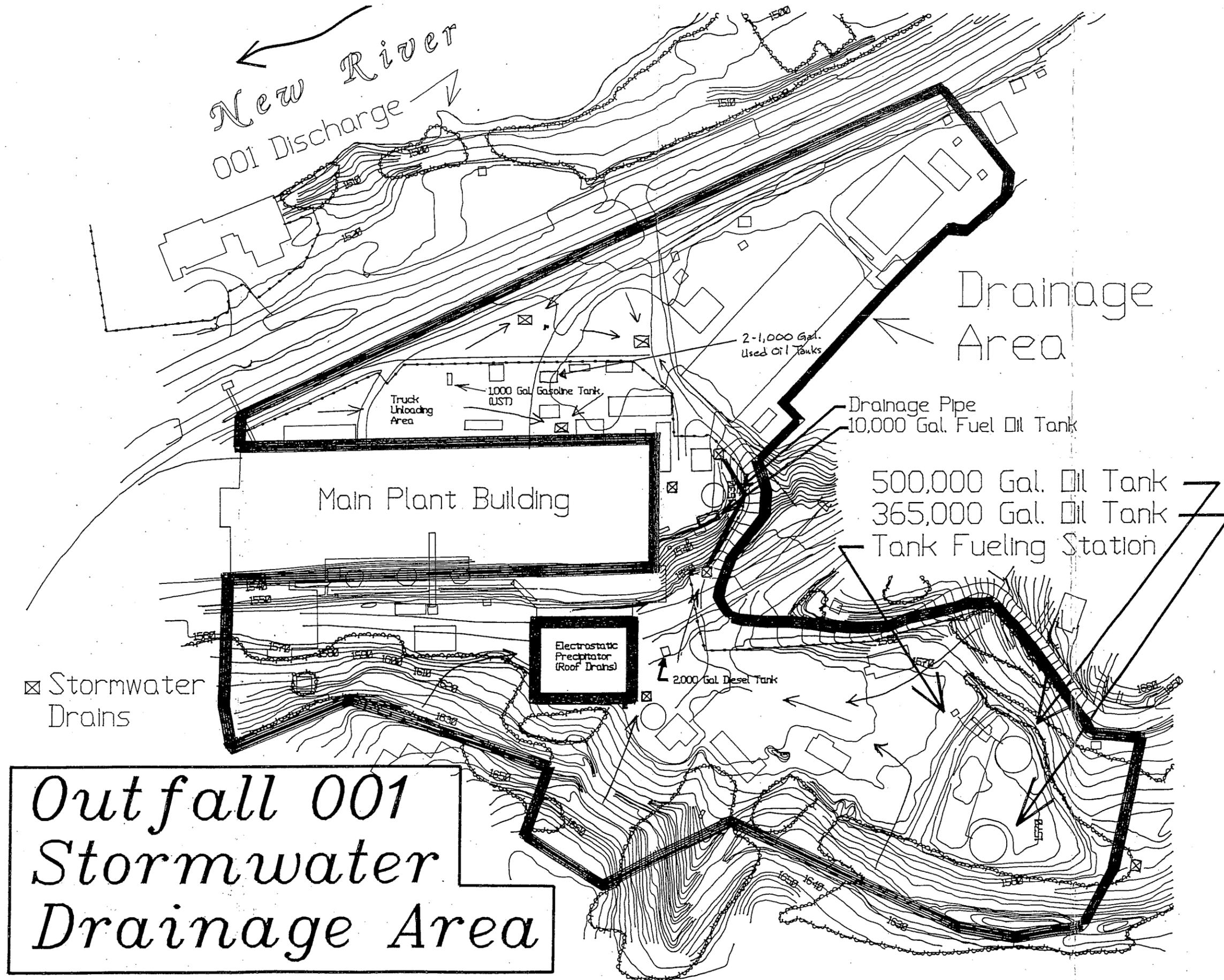
Water that percolates through the ash fill, groundwater intercepts, and stormwater that comes into direct contact with the active landfill areas is collected by the leachate pond. Water is retained in this pond until transferred manually by a portable pump on an as-needed basis to the adjacent (northwest) runoff collection pond for additional settling prior to discharge through Outfall 007 to the New River. Stormwater that falls on the portion of the landfill that does not come into direct contact with the ash is collected in crown ditches and transferred directly to the runoff collection pond. The quality and quantity of effluent from this outfall is not expected to change as a result of the proposed lateral landfill expansion as discussed above.

Outfall 007 will also discharge treated leachate from the proposed Adair Run Landfill, if constructed. This facility will be located primarily in West Virginia and is permitted under SW/NPDES Permit WV0116114 issued by the West Virginia Department of Environmental Protection. The Adair Run Landfill is on-hold indefinitely and no construction has taken place. However, if constructed, leachate and contact runoff from the Adair Run Landfill will be collected in a sump and gravity drained through a 12-inch diameter pipe to the existing landfill leachate pond, where it will receive treatment before discharging through Outfall 007. The estimated daily leachate flow will range from 6,385 gpd (during the short period prior to placement of any ash) to 715 gpd during the majority of the construction of the facility. The life of the Adair Run landfill is projected to be 23 years based on ash production estimates.

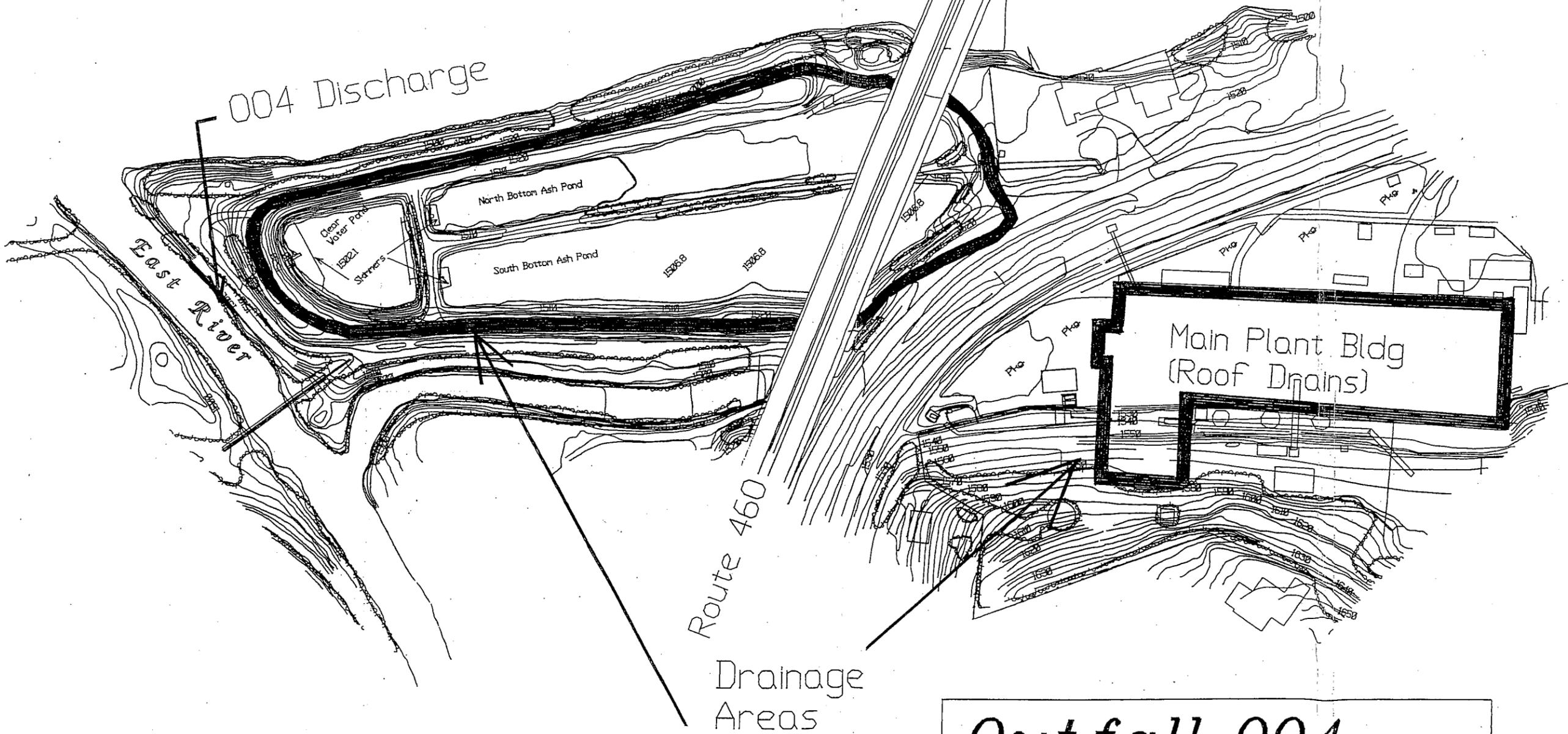
The landfill drainage area contains approximately 50 acres, of which about 10 acres is occupied by the two ponds. Glen Lyn Plant periodically uses Accord®, Arsenal®, glyphosate-based or other EPA approved herbicides to control vegetation in the drainage area to this outfall.

Outfall 008

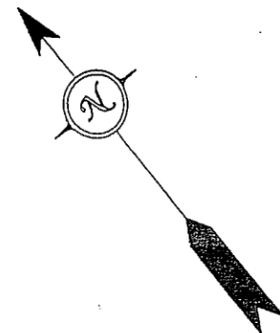
The discharge from Outfall 008, if constructed, will consist solely of non-contact runoff from a stormwater management pond that will be developed as part of the proposed Adair Run Landfill. The Adair Run Landfill will be located primarily in West Virginia and will have two other stormwater management ponds discharging to waters of the State of West Virginia. The stormwater management pond that will discharge through Outfall 008 will collect runoff from the northeast side of the landfill, including parts of the access road (see Stormwater Drainage Maps section for depiction of this area). During periods of below-average rainfall or drought, it is possible that Outfall 008 may not discharge. It is impractical to estimate the frequency or length of discharge periods, as the Company has no control over weather-related factors. As stated elsewhere in this application, the Adair Run Landfill has been postponed indefinitely.



New River

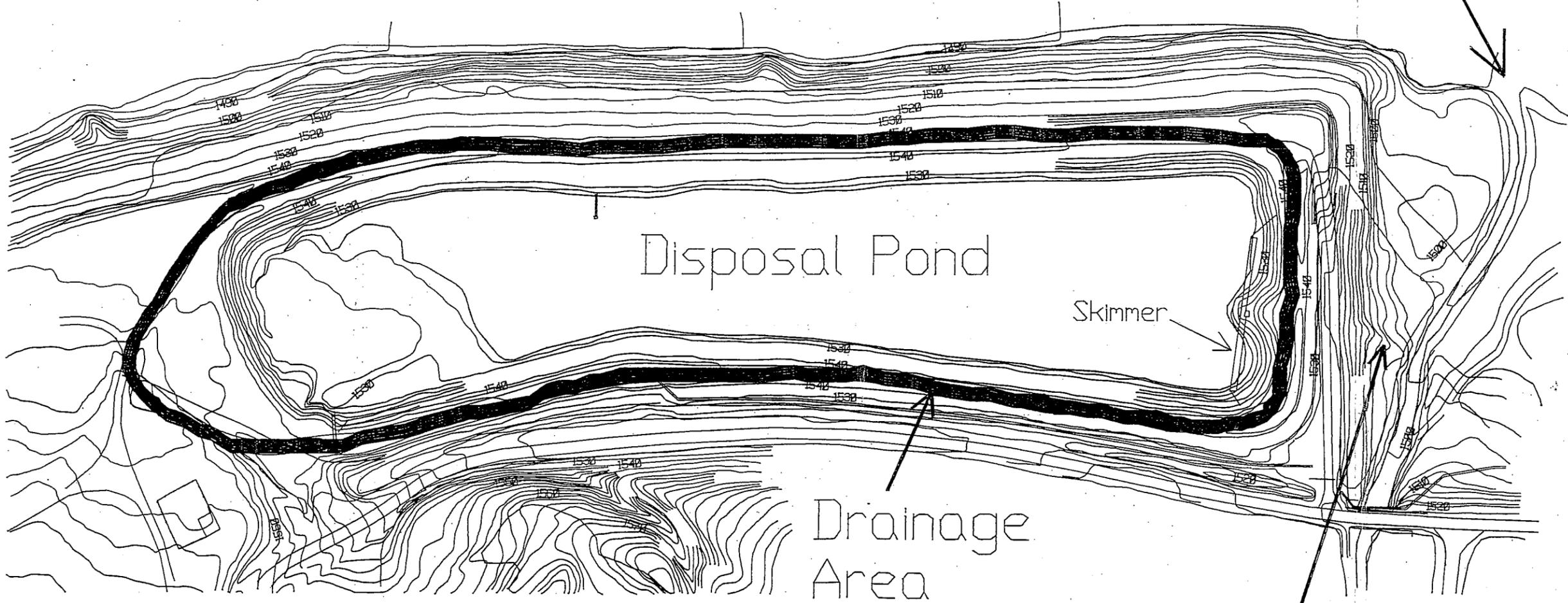


Outfall 004
Stormwater
Drainage Area



New River

Adair's Run



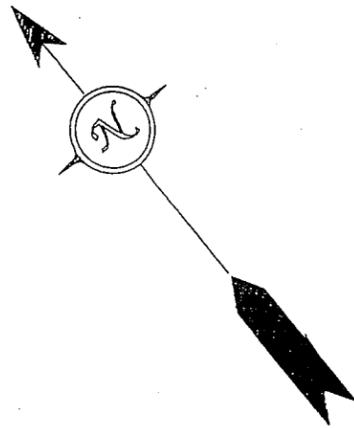
Disposal Pond

Skimmer

Drainage Area

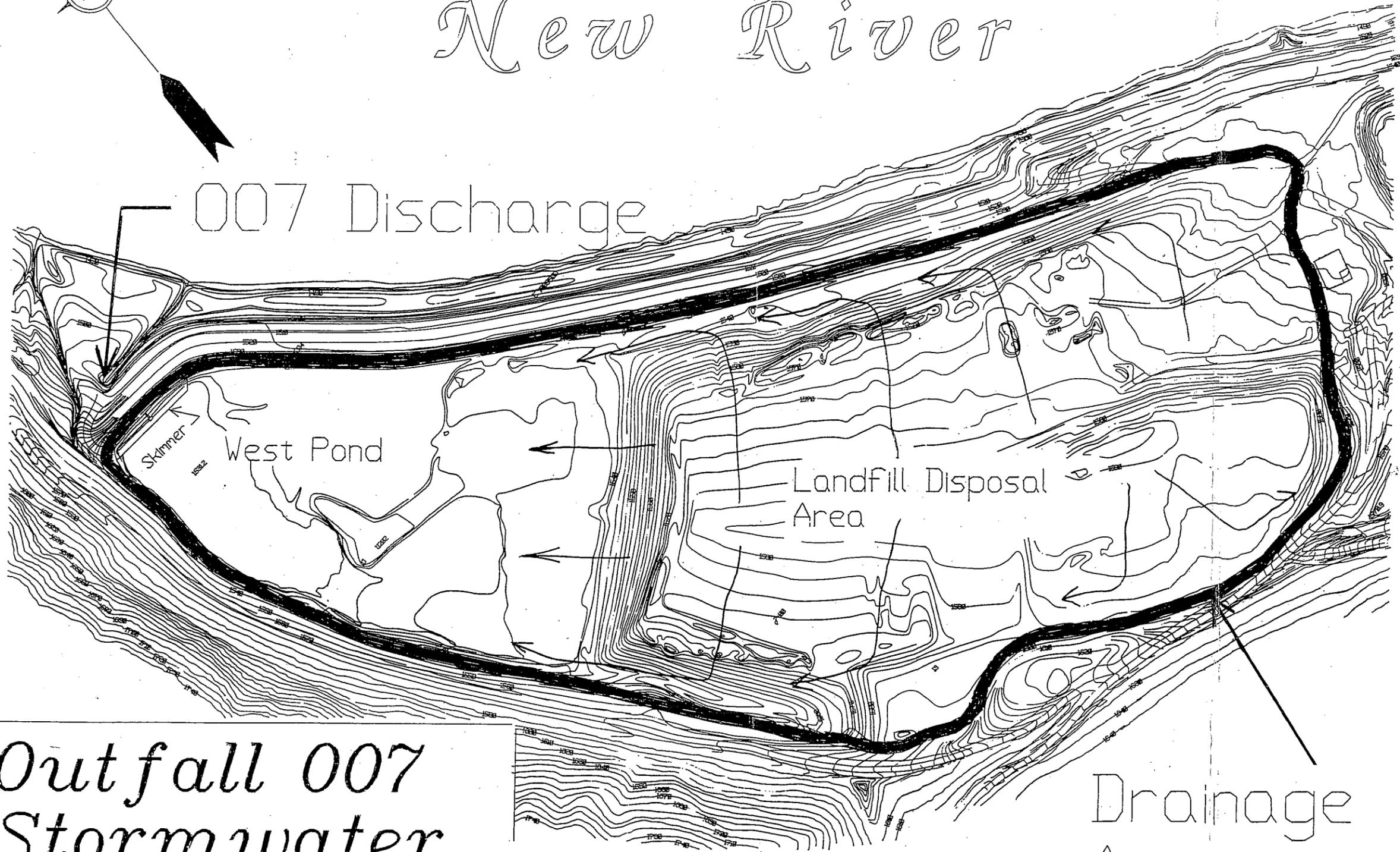
006 Discharge

Outfall 006
Stormwater
Drainage Area



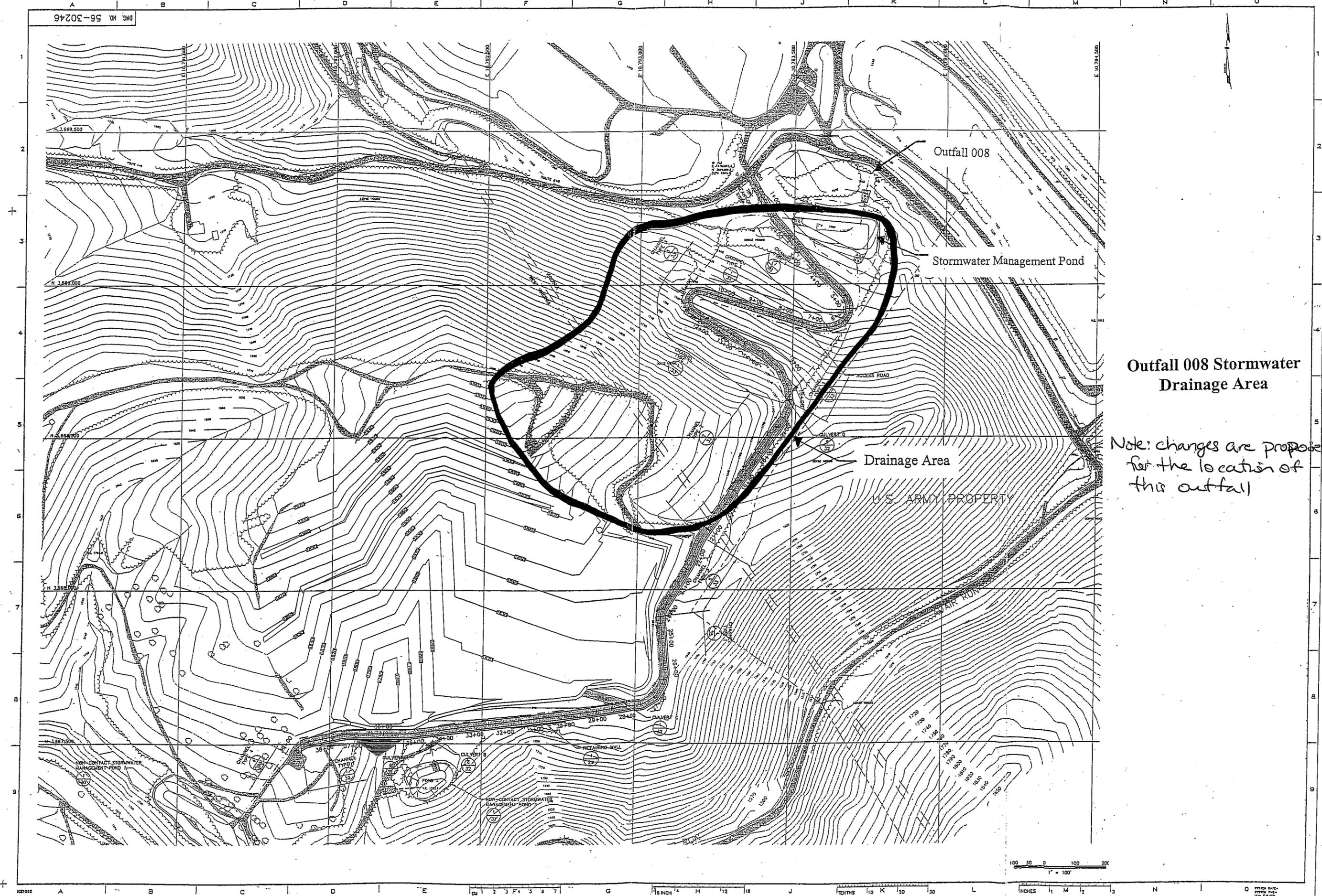
New River

007 Discharge



Outfall 007
Stormwater
Drainage Area

Drainage
Area



**Outfall 008 Stormwater
Drainage Area**

*Note: changes are proposed
for the location of
this outfall*

Note 1: FURTHER DESCRIPTION OF STORMWATER OUTFALLS

Outfall 001/901

The stormwater portion to Outfall 001 (Outfall 901) consists of runoff from the plant yard area, starting at the general office building and proceeding southeast to the coal yard (see Stormwater Drainage Maps section for depiction of this area). The coal yard is not included in the drainage area because coal yard drainage is collected and pumped to the bottom ash ponds. The stormwater collected from the Unit 6 precipitator roof is routed through an oil/water separator prior to release into the Ginny Hollow drainage tunnel. The secondary containment sump for the 500,000 and 365,000 gallon fuel oil tanks used to be manually discharged into the Ginny Hollow drainage tunnel. This discharge contribution has since been relocated to the Unit 6 silo sump which is pumped to the bottom ash/wastewater treatment ponds (Outfall 004). Accumulated stormwater in the Unit 6 fuel oil tank secondary containment is also periodically discharged to the drains leading to Outfall 901 manually following inspection. The Ginny Hollow drainage tunnel, which traverses the entire length of the plant property, also conveys stormwater collected from a portion of the Town of Glen Lyn, located uphill and west of the Glen Lyn Plant. All contributing stormwater flows from the plant property and plant activities have been identified within this application. The Company knows of no non-stormwater flow sources other than those identified that contribute to the Outfall 901 discharge.

The drainage area consists of approximately 14 total acres, including 1 acre of paved road, 3 acres of graveled or plant roadways, 4.5 acres of graveled substation, and 5.5 acres of vegetated land. Glen Lyn Plant periodically uses Accord®, Arsenal®, glyphosate-based or other EPA approved herbicides to control vegetation in the drainage area to this outfall.

Outfall 004

Stormwater contribution to the bottom ash/wastewater treatment pond system and eventual discharge to the East River via Outfall 004 includes runoff from the roof drains of the main generation building (except the Unit 6 precipitator roof, described above), the roof drains from the Unit 5 precipitator, stormwater collected from the coal yard, and up to the 10-year, 24-hour storm from the drainage area to Outfall 502 (see Stormwater Drainage Maps section for depiction of this area). Coal yard runoff is collected using a french drain system, perimeter drain system, collection sump, and pumping system with automatic controls triggered by the water level in the sump. In addition, rainfall that falls directly on the ponds, surrounding area and a portion of the runoff from the U.S. Route 460 bridge is treated within this system. All stormwater routed to the ponds receives treatment along with the wastewater flows to the system, including flow equalization, sedimentation, skimming, and coagulation, prior to discharge from Outfall 004.

The Company believes that it is not necessary or appropriate to have stormwater monitoring requirements placed on this treatment system. Stormwater flow discharged through Outfall 004 comprise only a small portion of the total flow, and receives treatment along with the wastewater, such that it would be impossible to obtain a sample representative of storm event data.

The total area of stormwater drainage includes 16.7 acres (see Stormwater Drainage Maps section for depiction of this area). This area includes 7 acres for the coal yard, 2.7 acres of roof drains, 3.4 acres of adjacent plant property, and 3.6 acres of direct precipitation to the ponds. Additionally, approximately 5 acres of drainage designated as Outfall 502 drains to the ponds up to the 10-year, 24-hour storm (see below for a further description). A small portion of U.S. Route 460 bridge drainage also drains to the ponds. The dikes of the ponds are sprayed annually in the spring with Escort® or other EPA approved herbicide to control woody stem vegetation.

Outfall 005/502

Outfall 502 receives stormwater runoff from two main areas which total approximately 5 acres (see Stormwater Drainage Maps section for depiction of this area). These areas consist of the area along the banks of the manmade channel (1.5 acres) and the parking area in front of the main plant building (3.5 acres). The parking area in front of the main plant building receives runoff primarily from a parking area (asphalt and gravel surfaces), but also receive stormwater runoff from roof drains of the facility's assembly building and office trailer, secondary containment dike of a fuel storage tank and from surrounding railroad tracks. This drainage leads to a drop inlet to a discharge tunnel leading to Outfall 005. The drop inlet is designated as Outfall 502.

During 2008, stormwater runoff to Outfall 502 was diverted to the bottom ash/wastewater treatment pond system which discharges to the East River via Outfall 004. It is estimated that the diversion has been constructed to handle the 10-year, 24-hour storm. Any precipitation event greater than the 10-year, 24-hour storm will continue to discharge via Outfall 502. However, the first-flush, which typically contains the bulk of pollutants, should be captured and diverted to the bottom ash/wastewater treatment ponds. The sampling results contained in this application on Form 2F, Part VII respective to Outfall 502 are for the discharge of diverted stormwater immediately prior to entering the diversion pipe to the bottom ash/wastewater treatment ponds. As a result, the Company does not believe that it is necessary or appropriate to impose a stormwater monitoring requirement on this discharge during the next permit term. Additionally, the Company requests that Outfall 502 remain in the reissued permit without monitoring requirements as an emergency stormwater outfall that will intermittently discharge if the specified storm is exceeded.

Glen Lyn Plant periodically uses Accord®, Arsenal®, glyphosate-based or other EPA approved herbicides to control vegetation in the drainage area to this outfall.

Outfall 006

In the event that the auxiliary fly ash pond was full and discharging through the weir, stormwater runoff would be an identified contributor to the discharge. However, Outfall 006 has not experienced a discharge, other than the small amount of seepage that infiltrates through the discharge tunnel, for many years. Except for periodic use for sluicing fly ash while the dry ash system has an outage, the only flow to the pond is from rainfall. Stormwater drainage for the pond is approximately 11 acres (see Stormwater Drainage Maps section for depiction of this area). This drainage area will decrease to approximately 2 acres following the proposed lateral landfill expansion and reduction if the pond size as discussed in Appendix A. The inboard dikes of the pond are sprayed annually in the spring with Escort® herbicide or other EPA approved herbicide to control woody stem vegetation.

In the event that the auxiliary fly ash pond is utilized, all storm water routed to the pond would receive treatment along with the wastewater flow to the system, including flow equalization, sedimentation, skimming, coagulation, and neutralization, prior to discharge from Outfall 006. Consequently, the Company does not believe that it is necessary or appropriate to impose a stormwater monitoring requirement on this discharge.

Outfall 007/907

The stormwater portion to Outfall 007 (Outfall 907) consists of runoff from the entire drainage area of the coal combustion by-product landfill (see Stormwater Drainage Maps section for depiction of this area). The drainage area for this runoff includes contact water from the landfill collected in the intermediate treatment (leachate) pond, and non-contact stormwater that drains from around the outside of the existing fill area. There is also believed to be a small, underground spring that contributes a small amount of flow to the treatment pond.

Water that percolates through the ash fill, groundwater intercepts, and stormwater that comes into direct contact with the active landfill areas is collected by the leachate pond. Water is retained in this pond until transferred manually by a portable pump on an as-needed basis to the adjacent (northwest) runoff collection pond for additional settling prior to discharge through Outfall 007 to the New River. Stormwater that falls on the portion of the landfill that does not come into direct contact with the ash is collected in crown ditches and transferred directly to the runoff collection pond. All water routed to the collection pond receives the same treatment, including flow equalization, sedimentation, skimming, and coagulation prior to being discharged through Outfall 007.

The landfill drainage area contains approximately 50 acres, of which about 10 acres is occupied by the two ponds. Glen Lyn Plant periodically uses Accord®, Arsenal®, glyphosate-based or other EPA approved herbicides to control vegetation in the drainage area to this outfall.

Outfall 008

The discharge from Outfall 008, if constructed, will consist solely of non-contact runoff from a stormwater management pond (Pond 2) that is proposed to support the Adair Run Landfill. The Adair Run Landfill will be located primarily in West Virginia and permitted under SW/NPDES Permit WV0116114 issued by the West Virginia Department of Environmental Protection. The Adair Run Landfill is on-hold indefinitely and no construction has taken place. However, if the Adair Run Landfill is constructed, so will Outfall 008. The drainage area contributing to Outfall 008 will consist of approximately 20.2 acres. Of which, approximately 17.96 acres will consist of vegetated hillside, and the remaining 2.25 acres will consist of paved access road (see Stormwater Drainage Maps section for depiction of this area). Runoff will enter the pond primarily through two channels; rip-rap will be used to protect the channel outlets (inlets to the pond). Details of the pond (Pond 2), including its outlet structure, are shown on Drawing Number 56-30249, which can be found in the Stormwater Drainage Maps section of this application.

The pond was designed to manage stormwater run-on and runoff from the 25-year, 24-hour storm event without overtopping. Post-development peak discharge is limited to the volume of predevelopment runoff for the 2-year, 24-hour storm event.

Note 2: SIGNIFICANT MATERIALS STORED

Outfall 001

The materials stored in the drainage area for Outfall 001 include:

- Structural steel components, including piping, stored on the ground on the hill behind the plant.
- Scrap metal, including a scrap metal dumpster, maintained on the hill behind the plant.
- Used wooden pallets stored on the ground behind the plant and in front of the plant prior to being removed for disposal.
- A small amount of asbestos piping stored on the ground on the hill behind the plant.
- Several above- and below-ground storage tanks. The two largest tanks are a 500,000 and 365,000-gallon aboveground fuel oil storage tanks. Both of these tanks are surrounded by an earthen clay berm and are equipped with a vapor monitoring system.

- Various materials shipped to or from the plant may be temporarily stored at the shipping/receiving area. This area may also include materials and equipment brought by outside contractors performing work at the plant.

Outfalls 004 and 006

Outside of the wastewater treated and discharged through Outfalls 004 and 006, no significant materials have been stored, treated, or disposed of in the stormwater drainage areas identified for these outfalls during the previous three years.

Outfall 005/502

Two 2,500-gallon fuel storage tanks with secondary containment are located within the Outfall 502 drainage area.

Outfall 007/907

Other than the ash disposal activities at the structural fill area, the only material storage within this drainage area is ash sluice piping for the wet ash system. The equipment used to operate the landfill is also periodically rinsed, with the water draining to the Outfall 007 collection pond.

Outfall 008

No significant materials are expected to be stored in this area, if constructed.

NPDES PERMIT RATING WORK SHEET

NPDES NO. VA0000370

- Regular Addition
- Discretionary Addition
- Score change, but no status change
- Deletion

Facility Name: APCO Glen Lyn

City: Glen Lyn, VA

Receiving Water: New River, East River, Adair Run

Reach Number: _____

Is this facility a steam electric power plant (SIC=4911) with one or more of the following characteristics?

1. Power output 500 MW or greater (not using a cooling pond/lake)
 2. A nuclear power plant
 3. Cooling water discharge greater than 25% of the receiving stream's 7Q10 flow rate
- YES; score is 600 (stop here) NO (continue)

Is this permit for a municipal separate storm sewer serving a population greater than 100,000?

- YES; score is 700 (stop here)
 NO (continue)

FACTOR 1: Toxic Pollutant Potential

PCS SIC Code: _____ Primary SIC Code: _____ Other SIC Codes: _____
 Industrial Subcategory Code: _____ (Code 000 if no subcategory)

Determine the Toxicity potential from Appendix A. Be sure to use the TOTAL toxicity potential column and check one)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
<input type="checkbox"/> No process waste streams	0	0	<input type="checkbox"/> 3.	3	15	<input type="checkbox"/> 7.	7	35
<input type="checkbox"/> 1.	1	5	<input type="checkbox"/> 4.	4	20	<input type="checkbox"/> 8.	8	40
<input type="checkbox"/> 2.	2	10	<input type="checkbox"/> 5.	5	25	<input type="checkbox"/> 9.	9	45
			<input type="checkbox"/> 6.	6	30	<input type="checkbox"/> 10.	10	50

Code Number Checked: _____

Total Points Factor 1: _____

FACTOR 2: Flow/Stream Flow Volume (Complete either Section A or Section B; check only one)

Section A Wastewater Flow Only Considered

Section B Wastewater and Stream Flow Considered

Wastewater Type (See Instructions)	Code	Points
Type I: Flow < 5 MGD	<input type="checkbox"/> 11	0
Flow 5 to 10 MGD	<input type="checkbox"/> 12	10
Flow > 10 to 50 MGD	<input type="checkbox"/> 13	20
Flow > 50 MGD	<input type="checkbox"/> 14	30
Type II: Flow < 1 MGD	<input type="checkbox"/> 21	10
Flow 1 to 5 MGD	<input type="checkbox"/> 22	20
Flow > 5 to 10 MGD	<input type="checkbox"/> 23	30
Flow > 10 MGD	<input type="checkbox"/> 24	50
Type III: Flow < 1 MGD	<input type="checkbox"/> 31	0
Flow 1 to 5 MGD	<input type="checkbox"/> 32	10
Flow > 5 to 10 MGD	<input type="checkbox"/> 33	20
Flow > 10 MGD	<input type="checkbox"/> 34	30

Wastewater Type (See Instructions)	Percent of instream Wastewater Concentration at Receiving Stream Low Flow	Code	Points
Type I/III:	< 10 %	<input type="checkbox"/> 41	0
	10 % to < 50 %	<input type="checkbox"/> 42	10
	> 50 %	<input type="checkbox"/> 43	20
Type II:	< 10 %	<input type="checkbox"/> 51	0
	10 % to < 50 %	<input type="checkbox"/> 52	20
	> 50 %	<input type="checkbox"/> 53	30

Code Checked from Section A or B: _____

Total Points Factor 2: _____

FACTOR 3: Conventional Pollutants
(only when limited by the permit)

NPDES NO: _____

A. Oxygen Demanding Pollutant: (check one) BOD COD Other: _____

Permit Limits: (check one)	<input type="checkbox"/>		Code	Points
	<input type="checkbox"/>	< 100 lbs/day	1	0
	<input type="checkbox"/>	100 to 1000 lbs/day	2	5
	<input type="checkbox"/>	> 1000 to 3000 lbs/day	3	15
	<input type="checkbox"/>	> 3000 lbs/day	4	20

Code Checked: _____

Points Scored: _____

B. Total Suspended Solids (TSS)

Permit Limits: (check one)	<input type="checkbox"/>		Code	Points
	<input type="checkbox"/>	< 100 lbs/day	1	0
	<input type="checkbox"/>	100 to 1000 lbs/day	2	5
	<input type="checkbox"/>	> 1000 to 5000 lbs/day	3	15
	<input type="checkbox"/>	> 5000 lbs/day	4	20

Code Checked: _____

Points Scored: _____

C. Nitrogen Pollutant: (check one) Ammonia Other: _____

Permit Limits: (check one)	<input type="checkbox"/>	Nitrogen Equivalent	Code	Points
	<input type="checkbox"/>	< 300 lbs/day	1	0
	<input type="checkbox"/>	300 to 1000 lbs/day	2	5
	<input type="checkbox"/>	> 1000 to 3000 lbs/day	3	15
	<input type="checkbox"/>	> 3000 lbs/day	4	20

Code Checked: _____

Points Scored: _____

Total Points Factor 3: _____

FACTOR 4: Public Health Impact

Is there a public drinking water supply located within 50 miles downstream of the effluent discharge (this includes any body of water to which the receiving water is a tributary)? A public drinking water supply may include infiltration galleries, or other methods of conveyance that ultimately get water from the above referenced supply.

YES (If yes, check toxicity potential number below)

NO (If no, go to Factor 5)

Determine the *human health* toxicity potential from Appendix A. Use the same SIC code and subcategory reference as in Factor 1. (Be sure to use the human health toxicity group column check one below)

Toxicity Group	Code	Points	Toxicity Group	Code	Points	Toxicity Group	Code	Points
<input type="checkbox"/> No process waste streams	0	0	<input type="checkbox"/> 3.	3	0	<input type="checkbox"/> 7.	7	15
<input type="checkbox"/> 1.	1	0	<input type="checkbox"/> 4.	4	0	<input type="checkbox"/> 8.	8	20
<input type="checkbox"/> 2.	2	0	<input type="checkbox"/> 5.	5	5	<input type="checkbox"/> 9.	9	25
			<input type="checkbox"/> 6.	6	10	<input type="checkbox"/> 10.	10	30

Code Number Checked: _____

Total Points Factor 4: _____

FACTOR 5: Water Quality Factors

NPDES NO.

A. *Is (or will) one or more of the effluent discharge limits based on water quality factors of the receiving stream (rather than technology-based federal effluent guidelines, or technology-based state effluent guidelines), or has a wasteload allocation been assigned to the discharge:*

<input type="checkbox"/>	Yes	Code 1	Points 10
<input type="checkbox"/>	No	2	0

B. *Is the receiving water in compliance with applicable water quality standards for pollutants that are water quality limited in the permit?*

<input type="checkbox"/>	Yes	Code 1	Points 0
<input type="checkbox"/>	No	2	5

C. *Does the effluent discharged from this facility exhibit the reasonable potential to violate water quality standards due to whole effluent toxicity?*

<input type="checkbox"/>	Yes	Code 1	Points 10
<input type="checkbox"/>	No	2	0

Code Number Checked: A __ B __ C __

Points Factor 5: A __ + B __ + C __ = __ TOTAL

FACTOR 6: Proximity to Near Coastal Waters

A. *Base Score: Enter flow code here (from Factor 2):* _____ *Enter the multiplication factor that corresponds to the flow code:* _____

Check appropriate facility HPRI Code (from PCS):

HPRI#	Code	HPRI Score	Flow Code	Multiplication Factor
<input type="checkbox"/>	1	1	20	
<input type="checkbox"/>	2	2	0	
<input type="checkbox"/>	3	3	30	
<input type="checkbox"/>	4	4	0	
<input type="checkbox"/>	5	5	20	
			11, 31, or 41	0.00
			12, 32, or 42	0.05
			13, 33, or 43	0.10
			14 or 34	0.15
			21 or 51	0.10
			22 or 52	0.30
			23 or 53	0.60
			24	1.00

HPRI code checked: __

Base Score: (HPRI Score) __ X (Multiplication Factor) __ = __ (TOTAL POINTS)

B. *Additional Points* *NEP Program*
For a facility that has an HPRI code of 3, does the facility discharge to one of the estuaries enrolled in the National Estuary Protection (NEP) program (see instructions) or the Chesapeake Bay?

	Code	Points
<input type="checkbox"/>	Yes	1
<input type="checkbox"/>	No	2

C. *Additional Points* *Great Lakes Area of Concern*
For a facility that has an HPRI code of 5, does the facility discharge any of the pollutants of concern into one of the Great Lakes' 31 areas of concern (see Instructions)

	Code	Points
<input type="checkbox"/>	Yes	1
<input type="checkbox"/>	No	2

Code Number Checked:

A __ B __ C __

Points Factor 6: A __ + B __ + C __ = __ TOTAL

SCORE SUMMARY

NPDES NO.

Factor	Description	Total Points
1	Toxic Pollutant Potential	_____
2	Flows/Streamflow Volume	_____
3	Conventional Pollutants	_____
4	Public Health Impacts	_____
5	Water Quality Factors	_____
6	Proximity to Near Coastal Waters	_____
TOTAL (Factors 1 through 6)		_____

S1. Is the total score equal to or greater than 80? Yes (Facility is a major) No

S2. If the answer to the above questions is no, would you like this facility to be discretionary major?

No

Yes (Add 500 points to the above score and provide reason below:

Reason:

NEW SCORE: 600

OLD SCORE: 600

LYNN V. WISE

Permit Reviewer's Name

510 562-6787

Phone Number

5/12/09

Date

ATTACHMENT B

RECEIVING STREAM INFORMATION

1. Flow Frequency Memo
2. Surface Water Withdrawal Data
3. 9-NEW030.15 Ambient Data
4. 9-ADR000.13 Ambient Data
5. WQ Assessment and Impaired Waters Fact Sheet
6. Incident Report Summaries

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Blue Ridge Regional Office - Roanoke, Water Division

3019 Peters Creek Road

Roanoke, VA 24019

SUBJECT: Flow Frequency Determination
APCO - Glen Lyn; VPDES Permit No. VA0000370

TO: File

FROM: Lynn V. Wise, Environmental Engineer, Sr.

DATE: May 4, 2009

COPIES:

The APCO - Glen Lyn Plant discharges through several outfalls on the New River, two outfalls on the East River, one outfall on Adair Run, and one outfall on an unnamed tributary to Adair Run in Glen Lyn, Virginia. Stream flow frequencies are required at this site for the purpose of calculating effluent limitations for the VPDES permit.

The USGS has operated continuous record gages on the New River at Glen Lyn, VA (#03176500) since 1927, and on Wolf Creek near Narrows, VA (#03175500) since 1938. The Wolf Creek gage as used to estimate flows for the East River and Adair Run sites, while the New River gage was used to determine flows on the mainstem New River. The New River gage is located at the U.S. Route 460 bridge in Glen Lyn, VA and the Wolf Creek gage is located at the Route 724 bridge in Giles County, VA. The flow frequencies for the gage and the discharge point are presented below.

Outfall 001:

This outfall is located on the New River in close proximity to the Glen Lyn gage. Therefore the flow frequencies at the gage should be applied to the outfall.

New River at Glen Lyn, VA (#03176500) and at 001:

Drainage Area = 3768 mi²

1Q10 = 874 cfs (565 mgd)	High Flow 1Q10 = 1180 cfs (762 mgd)
7Q10 = 1010 cfs (653 mgd)	High Flow 7Q10 = 1600 cfs (1034 mgd)
30Q5 = 1340 cfs (866 mgd)	High Flow 30Q10 = 2160 cfs (1396 mgd)
30Q10 = 1200 cfs (775 mgd)	HM = 3000 cfs (1939 mgd)
Annual Average = 4918 cfs (3178 mgd)	

The high flow months for the New River are January through May.

Outfall 002:

The APCO withdrawal occurs just downstream of the gage on the left-hand bank between outfalls 001 and 002. The flows for this location on the New River were determined by subtracting the APCO - Glen Lyn withdrawal from the gage flows. The highest peak day water withdrawal reported by APCO was used in the calculations.

New River at Outfall 002:

$1Q10 = 565 - 352.1 = 212.9 \text{ mgd}$	$\text{High Flow } 1Q10 = 762 - 352.1 = 409.9 \text{ mgd}$
$7Q10 = 653 - 352.1 = 300.9 \text{ mgd}$	$\text{High Flow } 7Q10 = 1034 - 352.1 = 681.9 \text{ mgd}$
$30Q5 = 866 - 352.1 = 513.9 \text{ mgd}$	$\text{High Flow } 30Q10 = 1396 - 352.1 = 1043.9 \text{ mgd}$
$30Q10 = 775 - 352.1 = 422.9 \text{ mgd}$	$\text{HM} = 1939 - 352.1 = 1586.9 \text{ mgd}$
$\text{Annual Average} = 3178 - 352.1 = 2825.9 \text{ mgd}$	

Outfall 003:

This outfall is just downstream from outfall 002. The flows at this location on the New River were determined by adding the flow from outfall 002 to the New River flows calculated for outfall 002.

New River at Outfall 003:

$1Q10 = 212.9 + 28.2 = 241.1 \text{ mgd}$	$\text{High Flow } 1Q10 = 409.9 + 28.2 = 438.1 \text{ mgd}$
$7Q10 = 300.9 + 28.2 = 329.1 \text{ mgd}$	$\text{High Flow } 7Q10 = 681.9 + 28.2 = 710.1 \text{ mgd}$
$30Q5 = 513.9 + 28.2 = 542.1 \text{ mgd}$	$\text{High Flow } 30Q10 = 1043.9 + 28.2 = 1072.1 \text{ mgd}$
$30Q10 = 422.9 + 28.2 = 451.1 \text{ mgd}$	$\text{HM} = 1586.9 + 28.2 = 1615.1 \text{ mgd}$
$\text{Annual Average} = 2825.9 + 28.2 = 2854.1 \text{ mgd}$	

Outfalls 004 and 005:

These outfalls are located near the mouth of the East River, which enters the New River just downstream of the U.S. Route 460 bridge. Outfall 005 discharges above outfall 004. The flows in the East River were estimated using the Wolf Creek gage. The high flow months for the East River are December through May. The discharge from outfall 005 was added to the East River flows to determine flows for outfall 004.

Wolf Creek near Narrows, VA (#03175500):

$\text{Drainage Area} = 223 \text{ mi}^2$	
$1Q10 = 17 \text{ cfs (11.0 mgd)}$	$\text{High Flow } 1Q10 = 29 \text{ cfs (18.7 mgd)}$
$7Q10 = 21 \text{ cfs (13.6 mgd)}$	$\text{High Flow } 7Q10 = 36 \text{ cfs (23.3 mgd)}$
$30Q5 = 31 \text{ cfs (20.0 mgd)}$	$\text{High Flow } 30Q10 = 60 \text{ cfs (38.8 mgd)}$
$30Q10 = 27 \text{ cfs (17.4 mgd)}$	$\text{HM} = 95 \text{ cfs (61.4 mgd)}$
$\text{Annual Average} = 298 \text{ cfs (192.6 mgd)}$	

East River at outfall 005:

$\text{Drainage Area} = 76.1 \text{ mi}^2$	
$1Q10 = 5.8 \text{ cfs (3.7 mgd)}$	$\text{High Flow } 1Q10 = 9.9 \text{ cfs (6.4 mgd)}$
$7Q10 = 7.2 \text{ cfs (4.6 mgd)}$	$\text{High Flow } 7Q10 = 12.3 \text{ cfs (7.9 mgd)}$
$30Q5 = 10.6 \text{ cfs (6.8 mgd)}$	$\text{High Flow } 30Q10 = 20.5 \text{ cfs (13.2 mgd)}$
$30Q10 = 9.2 \text{ cfs (5.9 mgd)}$	$\text{HM} = 32.4 \text{ cfs (20.9 mgd)}$
$\text{Annual Average} = 101.7 \text{ cfs (65.7 mgd)}$	

East River at mouth, at outfall 004:

Drainage Area = 76.1 mi ²	
1Q10 = 3.7 + 112.8 = 116.5 mgd	High Flow 1Q10 = 6.4 + 112.8 = 119.2 mgd
7Q10 = 4.6 + 112.8 = 117.4 mgd	High Flow 7Q10 = 7.9 + 112.8 = 120.7 mgd
30Q5 = 6.8 + 112.8 = 119.6 mgd	High Flow 30Q10 = 13.2 + 112.8 = 126 mgd
30Q10 = 5.9 + 112.8 = 118.7 mgd	HM = 20.9 + 112.8 = 133.7 mgd
Annual Average = 65.7 + 112.8 = 178.5 mgd	

Outfall 006:

This outfall is located near the mouth of Adair Run, which enters the New River just downstream of the East River. The flows in Adair Run were estimated using the Wolf Creek gage. The high flow months for Adair Run are December through May.

Adair Run at mouth, at outfall 006:

Drainage Area = 6.91 mi ²	
1Q10 = 0.53 cfs (0.34 mgd)	High Flow 1Q10 = 0.90 cfs (0.58 mgd)
7Q10 = 0.65 cfs (0.42 mgd)	High Flow 7Q10 = 1.12 cfs (0.72 mgd)
30Q5 = 0.96 cfs (0.62 mgd)	High Flow 30Q10 = 1.86 cfs (1.20 mgd)
30Q10 = 0.84 cfs (0.54 mgd)	HM = 2.94 cfs (1.90 mgd)
Annual Average = 9.23 cfs (5.97 mgd)	

Outfall 007

This outfall is located on the New River approximately one mile downstream of Adair Run. The flows for this location on the New River were determined by adding the East River flow and the Adair Run flow to the flows determined for the New River at outfall 003 plus the dry weather discharges from outfalls 004, 005, and 006. The high flow months are December through May.

New River at outfall 007:

Drainage Area = 3,852 mi ²	
1Q10 = 3.7 + 0.34 + 241.1 + 2.83 + 112.8 + 0 = 360.77 mgd	
7Q10 = 4.6 + 0.42 + 329.1 + 2.83 + 112.8 + 0 = 449.75 mgd	
30Q5 = 6.8 + 0.62 + 542.1 + 2.83 + 112.8 + 0 = 665.15 mgd	
30Q10 = 5.9 + 0.54 + 451.1 + 2.83 + 112.8 + 0 = 573.17 mgd	
High Flow 1Q10 = 6.4 + 0.58 + 438.1 + 2.83 + 112.8 + 0 = 560.71 mgd	
High Flow 7Q10 = 7.9 + 0.72 + 710.1 + 2.83 + 112.8 + 0 = 834.35 mgd	
High Flow 30Q10 = 13.2 + 1.2 + 1072.1 + 2.83 + 112.8 + 0 = 1202.13 mgd	
HM = 20.9 + 1.9 + 1615.1 + 2.83 + 112.8 + 0 = 1753.53 mgd	
Annual Average = 65.7 + 5.97 + 2854.1 + 2.83 + 112.8 + 0 = 3041.4 mgd	

Outfall 008

This outfall is located on an unnamed tributary to Adair Run. The values at the discharge point were determined by inspection of the USGS Peterstown Quadrangle topographical map, which shows the receiving stream as intermittent at the discharge point. The flow frequencies for intermittent streams are 0.0 cfs for the 1Q10, 7Q10, 30Q5, 30Q10, high flow 1Q10, high flow 7Q10, high flow 30Q10, and the harmonic mean.

Param. Code	00074 TURBIDITY-MACH TURBIDIMETER (FORMAZIN TURB UNIT)	00095 SPECIFIC CONDUCTANCE (UMHOSCM @ 25C)	00510 5-DAY BOD5 @ 20C	00403 PH/LAQ STANDARD UNITS SU	00510 ALCALINITY-TOTAL (MGL AS CaCO3)	00500 RESIDUE-TOTAL (MGL)	00505 RESIDUE-TOTAL VOLATILE (MGL)	00510 RESIDUE-TOTAL FIXED (MGL)	00515 RESIDUE-TOTAL FILTRABLE (DRIED AT
Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
06/28/2000 11:30	300	204,000	2,000 U	6.250	6,800	12,000	38,000	97,000	112,000
07/25/2000 10:00	3,500	181,000	2,000 U	6,000	6,000	12,000	38,000	97,000	112,000
08/29/2000 12:00	2,200	186,000	2,000 U	6,020	6,000	12,000	38,000	97,000	112,000
09/26/2000 11:00	1,200	210,000	2,000 U	6,000	6,000	12,000	38,000	97,000	112,000
10/11/2000 12:00	1,200	214,000	2,000 U	6,000	6,000	12,000	38,000	97,000	112,000
11/29/2000 10:40	2,100	206,000	2,000 U	5,800	6,000	12,000	38,000	97,000	112,000
12/29/2000 10:00	1,300	193,000	2,000 U	5,800	5,800	12,000	38,000	97,000	112,000
01/20/2001 08:20	2,700	211,000	2,000 U	5,800	5,800	12,000	38,000	97,000	112,000
02/21/2001 12:30	7,070	198,000	2,000 U	5,800	47,600	12,000	38,000	97,000	112,000
03/19/2001 12:30	4,200	173,000	2,000 U	5,750	47,600	12,000	38,000	97,000	112,000
04/18/2001 12:30	7,000	200,000	2,000 U	5,750	59,600	12,000	38,000	97,000	112,000
05/09/2001 12:45	2,270	200,000	2,000 U	5,910	71,600	12,000	38,000	97,000	112,000
06/22/2001 14:30	3,270	200,000	2,000 U	5,910	71,600	12,000	38,000	97,000	112,000
07/17/2001 10:00	4,300	235,000	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
08/15/2001 14:00	2,550	197,000	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
09/11/2001 11:00	4,700	204,000	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
10/25/2001 11:00	1,480	222,000	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
11/27/2001 09:10	9,3	212,000	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
12/19/2001 13:15	1,200	203,000	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
01/23/2002 13:15	2,100	391,400	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
02/25/2002 10:55	1,300	210,000	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
03/19/2002 13:30	1,200	208,000	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
04/22/2002 12:30	2,500	175,000	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
05/29/2002 12:30	1,200	199,000	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
06/26/2002 11:45	7,900	254,000	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
07/23/2002 10:50	1,800	254,000	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
08/17/2002 13:20	2,000	209,000	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
09/12/2002 10:30	4,100	193,000	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
10/22/2002 10:00	5,300	148,000	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
05/11/2003 11:15	3,820	140,000	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
05/13/2003 11:30	10,34	131,7	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
06/10/2003 11:45	9,5	10,06	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
06/12/2003 11:30	19,68	7,24	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
06/17/2003 11:45	22,71	7,24	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
07/01/2003 15:15	4,31	10,93	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
07/16/2003 10:10	3,15	11,96	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
07/19/2003 10:25	13,64	9,28	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
08/27/2003 10:00	22,2	7,26	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
09/15/2003 09:30	24,8	8,3	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
10/29/2003 11:40	15,7	8,3	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
12/16/2003 10:40	4,37	11,51	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
01/12/2004 10:40	3,8	10,4	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
02/17/2004 10:30	1,27	9,85	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
03/17/2004 10:30	2,2	7,5	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
04/15/2004 10:15	26,2	7,5	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
05/18/2004 11:00	1,5	10,4	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
07/09/2004 09:30	4,8	11,3	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
07/12/2004 10:10	3,4	13	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
08/20/2004 09:50	12,5	9,9	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
09/15/2004 14:35	20,1	9,9	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
10/02/2004 11:00	4,1	10,4	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
10/27/2004 11:50	15,2	10,4	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
05/17/2007 10:50	19,7	6,7	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
07/17/2007 11:35	19,7	6,7	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
09/11/2007 11:30	25,4	7,2	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
11/29/2007 11:00	8,4	13,4	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
01/29/2008 13:05	4,9	13	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
03/26/2008 12:35	8,4	12,7	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
05/29/2008 11:25	16,5	9,7	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
07/09/2008 11:25	26,2	7,8	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
09/02/2008 12:15	4,6	8	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
11/19/2008 09:25	4,6	13,1	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
01/22/2009 11:25	13	14,3	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000
03/19/2009 09:25	10,1	10,2	2,000 U	5,900	143,000	12,000	38,000	97,000	112,000

Collection Date/Time	00915 CALCIUM DISSOLVED (MGL AS CA)		00925 MAGNESIUM DISSOLVED (MGL AS MG)		00840 CHLORIDE TOTAL IN WATER MGL		00945 SULFATE TOTAL (MGL AS SO4)		01000 ARSENIC DISSOLVED (UG/L AS		01010 BERYLLIUM DISSOLVED (UG/L AS		01020 CADMIUM DISSOLVED (UG/L AS CD)		01030 COPPER DISSOLVED (UG/L AS CU)	
	Value	Com Code	Value	Com Code	Value	Com Code	Value	Com Code	Value	Com Code	Value	Com Code	Value	Com Code	Value	Com Code
05/29/2006 11:30	75.400	NULL	NULL	NULL	9.000	NULL	21.300	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
07/29/2006 07:00	62.400	NULL	NULL	NULL	7.500	NULL	18.500	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
09/29/2006 11:00	82.000	NULL	NULL	NULL	6.000	NULL	17.400	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
11/01/2006 12:00	87.100	NULL	NULL	NULL	6.000	NULL	17.400	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
11/20/2006 10:40	82.000	NULL	NULL	NULL	6.000	NULL	17.400	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
12/20/2006 10:00	58.900	NULL	NULL	NULL	7.000	NULL	13.200	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
01/30/2007 08:20	82.000	NULL	NULL	NULL	11.000	NULL	21.000	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
02/21/2007 12:50	56.400	NULL	NULL	NULL	8.000	NULL	12.500	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
03/15/2007 11:00	48.000	NULL	NULL	NULL	8.000	NULL	14.300	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
04/19/2007 13:10	30.300	NULL	NULL	NULL	8.100	NULL	15.800	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
05/09/2007 12:45	61.400	NULL	NULL	NULL	8.000	NULL	20.100	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
06/21/2007 14:30	61.100	NULL	NULL	NULL	8.400	NULL	17.000	NULL	1.600 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U
06/29/2007 10:00	59.900	NULL	NULL	NULL	6.700	NULL	17.000	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
07/17/2007 14:00	62.200	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
08/15/2007 07:00	59.500	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
11/23/2007 11:00	57.500	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
12/18/2007 13:10	68.200	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
01/23/2008 13:15	165.500 U	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
02/29/2008 11:15	36.000	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
03/14/2008 10:55	75.500	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
04/29/2008 13:30	65.500	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
05/09/2008 12:30	71.300	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
06/29/2008 11:45	98.900	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
07/30/2008 09:00	88.700	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
08/21/2008 10:55	91.300	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
09/24/2008 13:20	54.400	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
10/29/2008 15:20	78.200	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
11/24/2008 09:30	50.500	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
12/22/2008 10:00	82.800	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
01/27/2009 11:15	74.000	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
02/11/2009 11:15	67.500	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
03/13/2009 14:30	67.500	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
04/10/2009 14:45	54.800	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
05/14/2009 11:45	63.100	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
06/11/2009 11:45	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
10/29/2009 15:15	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
12/16/2009 10:10	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
02/12/2010 10:25	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
03/12/2010 10:00	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
04/27/2010 10:00	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
06/15/2010 09:30	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
08/25/2010 11:00	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
10/29/2010 11:40	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
12/16/2010 10:40	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
01/12/2011 10:10	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
02/11/2011 10:30	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
03/13/2011 10:30	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
04/14/2011 10:30	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
05/14/2011 10:30	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
06/14/2011 10:30	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
08/15/2011 10:15	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
10/18/2011 11:00	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
12/13/2011 10:45	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
02/09/2012 09:30	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
04/11/2012 10:10	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
06/29/2012 09:50	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
08/15/2012 10:45	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
10/02/2012 14:35	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
12/11/2012 11:25	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
01/18/2013 11:00	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
02/27/2013 11:50	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
03/27/2013 10:50	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
05/17/2013 11:35	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
07/31/2013 11:30	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
10/15/2013 11:00	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
01/25/2014 12:35	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
03/20/2014 12:15	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
05/02/2014 12:15	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
07/09/2014 09:25	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
11/19/2014 11:25	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL
01/22/2015 09:25	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

Collection Date Time	31616 SELENIUM DISSOLVED (USEL AS SE)	31648 E. COLI - MTEC-MF N0100ML	31649 ENTEROCOCCUS ME-MF N0100ML	32210 CHLOROPHYLLA UGL TRICHROMATIC	32211 CHLOROPHYLLA UGL SPECTROPHOTOMETRIC ACID	32212 CHLOROPHYLL-B UGL TRICHROMATIC	32214 CHLOROPHYLL-C UGL TRICHROMATIC
Value	Value	Value	Value	Value	Value	Value	Value
06/26/2006 11:30	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
07/25/2006 10:30	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
08/29/2006 10:30	300.000 U	NULL	NULL	NULL	NULL	NULL	NULL
09/26/2006 11:30	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
10/11/2006 12:00	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
11/20/2006 10:40	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
12/02/2006 10:30	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
01/30/2007 08:20	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
02/21/2007 12:50	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
03/15/2007 11:00	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
04/16/2007 13:10	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
05/09/2007 12:45	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
06/27/2007 14:30	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
07/26/2007 10:30	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
07/27/2007 14:00	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
08/17/2007 14:30	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
09/11/2007 11:30	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
10/25/2007 11:00	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
11/27/2007 09:10	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
01/23/2008 13:15	300.000 U	NULL	NULL	NULL	NULL	NULL	NULL
02/25/2008 11:15	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
03/14/2008 10:55	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
04/29/2008 12:30	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
05/29/2008 11:45	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
07/30/2008 09:00	200.000 U	NULL	NULL	NULL	NULL	NULL	NULL
08/24/2008 10:35	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
09/24/2008 14:30	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
10/28/2008 10:00	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
01/22/2009 11:30	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
02/17/2009 11:15	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
03/13/2009 14:40	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
04/10/2009 11:45	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
05/13/2009 10:25	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
06/14/2009 10:30	100.000 U	NULL	NULL	NULL	NULL	NULL	NULL
07/15/2009 10:15	25.000 U	NULL	NULL	NULL	NULL	NULL	NULL
08/18/2009 11:00	25.000 U	NULL	NULL	NULL	NULL	NULL	NULL
09/17/2009 10:45	25.000 U	NULL	NULL	NULL	NULL	NULL	NULL
10/13/2009 11:00	25.000 U	NULL	NULL	NULL	NULL	NULL	NULL
11/17/2009 10:45	25.000 U	NULL	NULL	NULL	NULL	NULL	NULL
12/17/2009 11:30	25.000 U	NULL	NULL	NULL	NULL	NULL	NULL
01/19/2010 11:30	25.000 U	NULL	NULL	NULL	NULL	NULL	NULL
02/17/2010 11:30	25.000 U	NULL	NULL	NULL	NULL	NULL	NULL
03/11/2010 11:30	25.000 U	NULL	NULL	NULL	NULL	NULL	NULL
04/12/2010 11:30	25.000 U	NULL	NULL	NULL	NULL	NULL	NULL
05/11/2010 12:35	500.000 U	NULL	NULL	NULL	NULL	NULL	NULL
06/20/2010 12:15	25.000 U	NULL	NULL	NULL	NULL	NULL	NULL
07/09/2010 09:25	25.000 U	NULL	NULL	NULL	NULL	NULL	NULL
08/19/2010 11:25	25.000 U	NULL	NULL	NULL	NULL	NULL	NULL
09/10/2010 09:25	25.000 U	NULL	NULL	NULL	NULL	NULL	NULL

32218	32219	46570	50091	70300	70507	83078
PHICOPHYTIN A UG/L SPECTROPHOTOMETRIC ACID	PHICOPHYTIN RATIO Q/D (653) SPECTRO BEFORE/AFTER	HARDNESS, CA MG CALCULATED (MGL/AS CARCO)	MERCURY, TL-FILTERED WATER, ULTRATRACE	RESIDUE TOTAL FILTERABLE (DRIED AT 180C) MGL	PHOSPHORUS IN TOTAL ORTHOPHOSPHATE (MGL/AS P)	TURBIDITY LAB NEPHELOMETRIC TURBIDITY UNITS, NTU
Value	Value	Value	Value	Value	Value	Value
Com Code	Com Code	Com Code	Com Code	Com Code	Com Code	Com Code
07/25/2009 10:00	NULL	NULL	NULL	NULL	NULL	NULL
07/25/2009 12:00	NULL	NULL	NULL	NULL	NULL	NULL
08/26/2009 12:00	NULL	NULL	NULL	NULL	NULL	NULL
08/26/2009 13:00	NULL	NULL	NULL	NULL	NULL	NULL
10/11/2009 12:00	NULL	NULL	NULL	NULL	NULL	NULL
11/20/2009 10:40	NULL	NULL	NULL	NULL	NULL	NULL
12/29/2009 10:00	NULL	NULL	NULL	NULL	NULL	NULL
01/30/2010 08:20	NULL	NULL	NULL	NULL	NULL	NULL
02/21/2010 12:50	NULL	NULL	NULL	NULL	NULL	NULL
03/15/2010 11:00	NULL	NULL	NULL	NULL	NULL	NULL
04/16/2010 13:10	NULL	NULL	NULL	NULL	NULL	NULL
05/08/2010 12:45	NULL	NULL	NULL	NULL	NULL	NULL
06/27/2010 14:30	NULL	NULL	NULL	NULL	NULL	NULL
07/27/2010 14:00	NULL	NULL	NULL	NULL	NULL	NULL
08/17/2010 14:00	NULL	NULL	NULL	NULL	NULL	NULL
09/17/2010 14:00	NULL	NULL	NULL	NULL	NULL	NULL
10/25/2010 11:00	NULL	NULL	NULL	NULL	NULL	NULL
11/27/2010 11:10	NULL	NULL	NULL	NULL	NULL	NULL
12/22/2010 08:10	NULL	NULL	NULL	NULL	NULL	NULL
01/18/2011 11:10	NULL	NULL	NULL	NULL	NULL	NULL
02/23/2011 13:15	NULL	NULL	NULL	NULL	NULL	NULL
03/23/2011 11:15	NULL	NULL	NULL	NULL	NULL	NULL
04/27/2011 11:15	NULL	NULL	NULL	NULL	NULL	NULL
05/17/2011 11:30	NULL	NULL	NULL	NULL	NULL	NULL
06/17/2011 11:45	NULL	NULL	NULL	NULL	NULL	NULL
07/29/2011 15:15	NULL	NULL	NULL	NULL	NULL	NULL
08/29/2011 10:10	NULL	NULL	NULL	NULL	NULL	NULL
09/27/2011 10:25	NULL	NULL	NULL	NULL	NULL	NULL
10/27/2011 10:00	NULL	NULL	NULL	NULL	NULL	NULL
08/15/2010 09:30	NULL	NULL	NULL	NULL	NULL	NULL
08/25/2010 11:00	NULL	NULL	NULL	NULL	NULL	NULL
09/28/2010 11:40	NULL	NULL	NULL	NULL	NULL	NULL
10/27/2010 11:40	NULL	NULL	NULL	NULL	NULL	NULL
11/25/2010 11:40	NULL	NULL	NULL	NULL	NULL	NULL
04/17/2011 10:30	NULL	NULL	NULL	NULL	NULL	NULL
05/17/2011 10:30	NULL	NULL	NULL	NULL	NULL	NULL
06/17/2011 10:30	NULL	NULL	NULL	NULL	NULL	NULL
08/15/2011 10:15	NULL	NULL	NULL	NULL	NULL	NULL
10/18/2011 10:45	NULL	NULL	NULL	NULL	NULL	NULL
02/13/2012 10:45	NULL	NULL	NULL	NULL	NULL	NULL
02/09/2012 09:30	NULL	NULL	NULL	NULL	NULL	NULL
04/11/2012 10:10	NULL	NULL	NULL	NULL	NULL	NULL
06/29/2012 09:50	NULL	NULL	NULL	NULL	NULL	NULL
08/15/2012 10:45	NULL	NULL	NULL	NULL	NULL	NULL
10/09/2012 14:35	NULL	NULL	NULL	NULL	NULL	NULL
12/17/2012 11:25	NULL	NULL	NULL	NULL	NULL	NULL
02/19/2013 11:00	NULL	NULL	NULL	NULL	NULL	NULL
05/27/2013 11:30	NULL	NULL	NULL	NULL	NULL	NULL
07/11/2013 11:30	NULL	NULL	NULL	NULL	NULL	NULL
08/14/2013 11:30	NULL	NULL	NULL	NULL	NULL	NULL
11/29/2013 11:00	NULL	NULL	NULL	NULL	NULL	NULL
01/15/2014 12:05	NULL	NULL	NULL	NULL	NULL	NULL
02/25/2014 12:35	NULL	NULL	NULL	NULL	NULL	NULL
05/20/2014 12:15	NULL	NULL	NULL	NULL	NULL	NULL
07/09/2014 12:20	NULL	NULL	NULL	NULL	NULL	NULL
09/02/2014 12:15	NULL	NULL	NULL	NULL	NULL	NULL
11/19/2014 09:25	NULL	NULL	NULL	NULL	NULL	NULL
01/22/2015 11:25	NULL	NULL	NULL	NULL	NULL	NULL
03/10/2015 09:25	NULL	NULL	NULL	NULL	NULL	NULL

Station ID	Permit Code	Name	Collection Date Time	Temp	Calc	Do	pH	90076	90075	90310	90403	90410	90490	90505	RESIDUE TOTAL		RESIDUE TOTAL	
															Value	Com Code	Value	Com Code
9-ADUR000-13	07/25/2008 10:30		17	13.8	8.5	8.05		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	09/26/2008 10:30		17	13.8	8.15	8.15		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	11/20/2008 10:30		17	13.8	8.42	8.42		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	01/20/2009 07:40		0.9	13.9	8.36	8.36		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	05/08/2009 12:00		1.6	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	08/15/2009 09:40		1.6	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	10/25/2009 10:30		1.5	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	12/18/2009 10:30		1.5	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	02/25/2009 10:30		1.5	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	04/23/2009 10:30		1.5	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	06/25/2009 10:30		1.5	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	08/28/2009 14:00		1.5	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	10/28/2009 09:45		1.5	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	12/12/2009 11:30		1.5	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	04/07/2009 11:30		1.5	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	07/16/2009 11:30		1.5	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	09/22/2009 11:30		1.5	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	05/17/2007 10:30		1.5	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	07/17/2007 11:20		1.5	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	07/24/2007 13:45		1.5	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	08/06/2007 12:00		1.5	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	08/20/2007 12:10		1.5	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	10/16/2007 12:10		1.5	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	11/28/2007 10:45		1.5	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	01/15/2008 12:50		1.5	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	03/25/2008 12:25		1.5	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	05/20/2008 12:00		1.5	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	07/09/2008 12:00		1.5	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	09/02/2008 12:10		1.5	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00
	11/19/2008 09:15		1.5	10.37	8.29	8.29		2.50	28.00	2.00	6.70	6.40	130.00	130.00	26.00	26.00	26.00	26.00

Collection Date Time	00510		00515		00530		00535		00540		00600		00615		00620	
	RESIDUE, TOTAL FIXED (MG/L)	Com Code	RESIDUE, TOTAL FIXED (MG/L)	Com Code	RESIDUE, TOTAL NONFIXABLE	Com Code	RESIDUE, VOLATILE NONFIXABLE	Com Code	RESIDUE, FIXED NONFIXABLE	Com Code	NITROGEN, TOTAL (MG/L AS N)	Com Code	NITRATE NITROGEN, TOTAL	Com Code	NITRATE NITROGEN, TOTAL	Com Code
07/25/2000 10:30	194,000	NULL	194,000	NULL	7,000	NULL	3,000	NULL	4,000	NULL	NULL	NULL	200	NULL	200	NULL
09/26/2000 10:45	131,000	NULL	142,000	NULL	10,000	NULL	6,000	NULL	13,000	NULL	NULL	NULL	200	NULL	200	NULL
10/26/2000 10:30	152,000	NULL	185,000	NULL	3,000	U	3,000	U	3,000	U	NULL	NULL	200	U	200	U
11/26/2000 07:30	81,000	NULL	91,000	NULL	3,000	U	3,000	U	3,000	U	NULL	NULL	200	U	200	U
03/15/2001 10:45	81,000	NULL	91,000	NULL	10,000	NULL	3,000	U	3,000	U	NULL	NULL	200	U	200	U
03/08/2001 12:00	84,000	NULL	94,000	NULL	7,000	NULL	3,000	U	3,000	U	NULL	NULL	200	U	200	U
08/15/2001 09:40	94,000	NULL	104,000	NULL	3,000	U	3,000	U	3,000	U	NULL	NULL	200	U	200	U
10/25/2001 10:30	117,000	NULL	127,000	NULL	3,000	U	3,000	U	3,000	U	NULL	NULL	200	U	200	U
07/25/2002 10:50	80,000	NULL	90,000	NULL	3,000	U	3,000	U	3,000	U	NULL	NULL	200	U	200	U
07/25/2002 10:50	80,000	NULL	90,000	NULL	3,000	U	3,000	U	3,000	U	NULL	NULL	200	U	200	U
06/25/2002 10:45	47,000	NULL	57,000	NULL	10,000	NULL	3,000	U	13,000	NULL	NULL	NULL	200	U	200	U
10/28/2002 14:00	91,000	NULL	101,000	NULL	3,000	U	3,000	U	11,000	NULL	NULL	NULL	200	U	200	U
12/12/2002 09:45	66,000	NULL	76,000	NULL	3,000	U	3,000	U	18,000	NULL	NULL	NULL	200	U	200	U
07/11/2003 11:05	70,000	NULL	80,000	NULL	3,000	U	3,000	U	18,000	NULL	NULL	NULL	200	U	200	U
04/10/2003 11:30	87,000	NULL	97,000	NULL	6,000	NULL	3,000	U	9,000	NULL	NULL	NULL	200	U	200	U
07/16/2003 11:15	81,000	NULL	91,000	NULL	3,000	U	3,000	U	3,000	U	NULL	NULL	200	U	200	U
03/27/2007 11:30	NULL	NULL	NULL	NULL	28,000	NULL	4,000	NULL	24,000	NULL	NULL	NULL	200	U	200	U
05/17/2007 10:30	NULL	NULL	NULL	NULL	3,000	U	3,000	U	3,000	U	NULL	NULL	200	U	200	U
06/26/2007 12:00	NULL	NULL	NULL	NULL	3,000	U	3,000	U	3,000	U	NULL	NULL	200	U	200	U
07/24/2007 13:45	NULL	NULL	NULL	NULL	4,000	NULL	3,000	U	7,000	NULL	NULL	NULL	200	U	200	U
08/24/2007 11:15	NULL	NULL	NULL	NULL	4,000	NULL	3,000	U	7,000	NULL	NULL	NULL	200	U	200	U
11/28/2007 10:45	NULL	NULL	NULL	NULL	3,000	U	3,000	U	3,000	U	NULL	NULL	200	U	200	U
01/16/2008 12:10	NULL	NULL	NULL	NULL	3,000	U	3,000	U	3,000	U	NULL	NULL	200	U	200	U
01/15/2008 12:25	NULL	NULL	NULL	NULL	3,000	U	3,000	U	3,000	U	NULL	NULL	200	U	200	U
03/25/2008 12:25	NULL	NULL	NULL	NULL	3,000	U	3,000	U	3,000	U	NULL	NULL	200	U	200	U
03/25/2008 12:25	NULL	NULL	NULL	NULL	3,000	U	3,000	U	3,000	U	NULL	NULL	200	U	200	U
07/09/2008 12:00	NULL	NULL	NULL	NULL	3,000	U	3,000	U	3,000	U	NULL	NULL	200	U	200	U
07/09/2008 12:00	NULL	NULL	NULL	NULL	3,000	U	3,000	U	3,000	U	NULL	NULL	200	U	200	U
06/02/2008 12:00	NULL	NULL	NULL	NULL	3,000	U	3,000	U	3,000	U	NULL	NULL	200	U	200	U
11/19/2008 09:15	NULL	NULL	NULL	NULL	3,000	U	3,000	U	3,000	U	NULL	NULL	200	U	200	U

Collection Date Time	3221 F CHLOROPHYLL-A UGL SPECTROPHOTOMETER	3221 G CHLOROPHYLL-B UGL TRICHROMATIC	3221 H CHLOROPHYLL-C UGL TRICHROMATIC	3221 I PHEOPHYTIN-A UGL SPECTROPHOTOME	3221 J PHEOPHYTIN RATIO	70557 PHOSPHORUS IN TOTAL ORTHOPHOSPHATE (MOL)	82079 TURBIDITY LAB NEPHELOMETRIC TURBIDITY UNITS: NTU
Value	Com Code	Value	Com Code	Value	Com Code	Value	Com Code
07/25/2008 10:30	NULL	NULL	NULL	NULL	NULL	NULL	NULL
09/26/2008 10:45	NULL	NULL	NULL	NULL	NULL	NULL	NULL
11/20/2008 10:30	NULL	NULL	NULL	NULL	NULL	NULL	NULL
01/29/2009 10:45	NULL	NULL	NULL	NULL	NULL	NULL	NULL
03/19/2009 10:45	NULL	NULL	NULL	NULL	NULL	NULL	NULL
05/08/2009 12:00	NULL	NULL	NULL	NULL	NULL	NULL	NULL
06/13/2009 09:40	NULL	NULL	NULL	NULL	NULL	NULL	NULL
10/25/2009 10:30	500 U	500 U	500 U	500 U	500 U	500 U	500 U
12/18/2009 10:30	610 U	500 U	500 U	500 U	500 U	500 U	500 U
02/25/2009 10:30	1,520 U	500 U	500 U	500 U	500 U	500 U	500 U
04/22/2009 10:45	1,960 U	500 U	500 U	500 U	500 U	500 U	500 U
06/25/2009 10:45	1,960 U	500 U	500 U	500 U	500 U	500 U	500 U
12/17/2009 09:45	570 U	500 U	500 U	500 U	500 U	500 U	500 U
01/17/2010 11:05	NULL	NULL	NULL	NULL	NULL	NULL	NULL
04/19/2010 11:30	NULL	NULL	NULL	NULL	NULL	NULL	NULL
07/14/2010 11:15	NULL	NULL	NULL	NULL	NULL	NULL	NULL
09/16/2010 11:15	NULL	NULL	NULL	NULL	NULL	NULL	NULL
03/27/2007 11:30	NULL	NULL	NULL	NULL	NULL	NULL	NULL
05/17/2007 10:30	NULL	NULL	NULL	NULL	NULL	NULL	NULL
07/11/2007 11:20	NULL	NULL	NULL	NULL	NULL	NULL	NULL
08/09/2007 12:00	NULL	NULL	NULL	NULL	NULL	NULL	NULL
10/16/2007 12:10	NULL	NULL	NULL	NULL	NULL	NULL	NULL
10/16/2007 12:10	NULL	NULL	NULL	NULL	NULL	NULL	NULL
11/28/2007 10:45	NULL	NULL	NULL	NULL	NULL	NULL	NULL
01/15/2008 12:30	NULL	NULL	NULL	NULL	NULL	NULL	NULL
03/25/2008 12:25	NULL	NULL	NULL	NULL	NULL	NULL	NULL
05/20/2008 12:00	NULL	NULL	NULL	NULL	NULL	NULL	NULL
07/09/2008 12:00	NULL	NULL	NULL	NULL	NULL	NULL	NULL
08/02/2008 12:40	NULL	NULL	NULL	NULL	NULL	NULL	NULL
11/19/2008 09:15	NULL	NULL	NULL	NULL	NULL	NULL	NULL



2008 Impaired Waters

Categories 4 and 5 by Impaired Area ID*

New River Basin

Cause Group Code: **N29R-01-PCB**

New River, Claytor Lake, Peak Creek and Reed Creek

Location: The impairment begins at the I-77 bridge crossing the New River and extends downstream to the VA/WVA State Line and includes the tributaries Peak Creek and Reed Creek as described below.

City / County: Giles Co. Montgomery Co. Pulaski Co. Radford City

Use(s): Fish Consumption

Cause(s)* /

VA Category: PCB in Fish Tissue/ 5A

The Virginia Department of Health (VDH) issued a fish consumption advisory on August 6, 2001 for polychlorinated biphenyls (PCBs) for the lower portion of the New River (Rt. 114 Bridge downstream to the VA / WVA State Line - 52.0 miles) based on fish tissue collections from Carp. An Advisory extension to Claytor dam was issued 8/06/2003 (11.47 miles) recommends that no carp be consumed in these waters and no more than two meals per month of flathead and channel catfish. The VDH PCB Fish Consumption Advisory was further extended upstream on the New River (13 miles) to the I-77 Bridge to include the lower portions of Peak Creek (4.95 miles), Reed Creek (16.35 miles) and Claytor Lake (4,287 acres) on 12/02/2004. The VDH advises consumption should not exceed two meals per month for carp and smallmouth bass. The VDH level of concern is 50 parts per billion (ppb) in fish tissue.

There are eight fish tissue collection sites within the 2008 data window reporting exceedences of the WQS based 54 ppb fish tissue value (TV). These data are reviewed by the VDH in making an advisory determination. A complete listing of collection sites and associated fish tissue data are available at <http://www.deq.virginia.gov/fishtissue/fishtissue.html>. A more detailed presentation of the data can also be found using an interactive mapping application at <http://gisweb.deq.state.va.us/>. The VDH Advisory information is also available via the web at <http://www.vdh.virginia.gov/Epidemiology/PublicHealthToxicology/Advisories/>.

Assessment Unit / Water Name / Description	Cause Category / Name	Cycle First Listed	TMDL Schedule	Size
VAW-N29R_NEW01A02 / New River Lower / New River mainstem from the backwaters of Bluestone Reservoir, Route 460, to the confluence of Rich Creek.	5A PCB in Fish Tissue	2002	2014	3.14
VAW-N29R_NEW02A02 / New River Middle 1 / New River mainstem from the mouth of Rich Creek upstream to the confluence of Wolf Creek.	5A PCB in Fish Tissue	2002	2014	3.50
VAW-N29R_NEW03A02 / New River Middle 2 / New River mainstem from the confluence of Wolf Creek upstream to the Celanese Acetate Plant outfalls.	5A PCB in Fish Tissue	2002	2014	2.79
VAW-N29R_NEW04A02 / New River Upper / New River mainstem from the Celanese Acetate Plant outfalls upstream to the watershed boundary at the confluence of Stony Creek.	5A PCB in Fish Tissue	2002	2014	5.65
VAW-N35R_NEW01A00 / New River / New River mainstem from the Rt. 460 Bridge at Glen Lyn downstream to the Virginia/West Virginia State Line.	5A PCB in Fish Tissue	2002	2014	6.85

New River, Claytor Lake, Peak Creek and Reed Creek

*Impaired Area ID: VAW-N29R-01 - Fish Consumption

PCB in Fish Tissue - Total Impaired Size by Water Type:

Estuary* (Sq. Miles)	Reservoir* (Acres)	River* (Miles)
		21.93

Sources:

Source Unknown

*Incorporates only those Cause Group Codes assigned to the Impaired Area ID. Header Information: Location, City/County, Cause/VA Category and Narratives describe the total impaired area per Cause Group Code. Sizes may not reflect the entire specific Cause impairment.

POLLUTION INCIDENT REPORT FORM

Return to Main Menu

Reporting Information Name: Joe Ryder, via NRC/EOC Affiliation: AEP IR#: 2008-W-0072 Date: 8/31/07 Time: 07:29 AM Phone: (540) 599-7729		Incident Description Incident Date: 8/31/07 Incident Time: 01:30 AM Material Released: #2 fuel oil Quantity Released: 50 Unit: Gallon In Water: 2	
Site Information Facility Permitted: <input checked="" type="checkbox"/> Name: Fuel oil, release, Glen Lyn plant Address: 100 APCO Road City: Glen Lyn Zip: 24093 County/Cit: Giles Contact: Joe Ryder Phone: (540) 726-1212		Incident Description: <input type="checkbox"/> Petroleum <input type="checkbox"/> Solid Waste <input type="checkbox"/> Haz Waste <input type="checkbox"/> Water <input type="checkbox"/> Air <input type="checkbox"/> VWPP <input type="checkbox"/> Sewage <input type="checkbox"/> Fish Kill Receiving Waters: New River Possible Receptors: Stream Basin: New Topo Quad: Narrows	
Responsible Party Name: AEP Address: _____ City: _____ State: _____ Zip: _____ Contact: _____ Phone: _____		Incident Summary: rupture in 1/2" fuel line released 50 gal. to ground; area boomed and absorbents applied; ~2 gal. got through containment to New River causing small sheen	
Owner Name: AEP Address: _____ City: _____ State: _____ Zip: _____ Contact: _____ Phone: _____		Status: <input type="checkbox"/> Open <input checked="" type="checkbox"/> Closed Permitted/Registration/Case No.: _____	
Response Information Inspector: LAL Call Date: 9/11/07 Inspection Date: 9/11/07 Response Due: 9/5/07 Response Rcvd: 9/5/07		Referred: <input type="checkbox"/> Air <input type="checkbox"/> Waste <input type="checkbox"/> Water <input type="checkbox"/> Remediation <input type="checkbox"/> Enforcement	
Comments: 8/31 - PREP duty officer LAL called Ryder w/ AEP; he reported the spill was contained and to be cleaned up either by AEP or contractor 9/4 - LAL called to check status and request 5-day letter; Ryder reported clean-up complete; 9/5 - received 5-day by fax; AEP called to verify 9/11 - inspected; booms to be left in place to absorb light sheen on pavement; no sheen at outfall			

POLLUTION INCIDENT REPORT FORM

Return to Main Menu

Reporting Information Name: <input type="text" value="Frank Tanner"/> Affiliation: <input type="text" value="AEP Glen Lyn"/>		IR# <input type="text" value="2009-W-0156"/> Date: <input type="text" value="12/3/08"/> Time: <input type="text" value="07:08 PM"/>		Incident Description <input checked="" type="checkbox"/> Petroleum <input type="checkbox"/> Solid Waste <input type="checkbox"/> Haz Waste <input type="checkbox"/> Water <input type="checkbox"/> Air <input type="checkbox"/> VWPP <input type="checkbox"/> Sewage <input type="checkbox"/> Fish Kill		Incident Date: <input type="text"/> Incident Time: <input type="text"/> Material Released: <input type="text" value="diesel"/> Quantity Released: <input type="text" value="1"/> Unit: <input type="text" value="unknown"/> In Water: <input type="text" value="1"/>	
Site Information Facility Permitted: <input checked="" type="checkbox"/>		Name: <input type="text" value="Sheen from unknown source"/> Address: <input type="text" value="New River near APCO Road"/> City: <input type="text" value="Glen Lyn"/> Zip: <input type="text"/>		County/Cit: <input type="text" value="Giles"/> Contact: <input type="text"/> Phone: <input type="text" value="(540) 726-1217"/>		Receiving Waters: <input ->="" new="" river<br="" type="text" value="Jenny Hollow"/> Possible Receptors: <input type="text" value="New River"/> Basin: <input type="text" value="New"/> Topo Quad: <input type="text" value="Narrows"/>	
Responsible Party Name: <input type="text" value="AEP"/> Address: <input type="text"/> City: <input type="text"/> State: <input type="text"/> Zip: <input type="text"/>		Contact: <input type="text"/> Phone: <input type="text"/> Zip: <input type="text"/>		Incident Summary: sheen from unknown source along New River at mouth of "Jenny Hollow" tunnel beneath plant; plant personnel put out booms and pads, trying to determine source, may be coming from upstream watershed, in WV		Status: <input type="checkbox"/> Open <input checked="" type="checkbox"/> Closed Permitted/Registration/Case No.: <input type="text" value="12/19/08"/>	
Owner Name: <input type="text"/> Address: <input type="text"/> City: <input type="text"/> State: <input type="text"/> Zip: <input type="text"/>		Contact: <input type="text"/> Phone: <input type="text"/> Zip: <input type="text"/>		Referred: <input type="checkbox"/> Air <input type="checkbox"/> Waste <input type="checkbox"/> Water Remediation: <input type="text" value="12/19/08"/> Enforcement: <input type="text"/>		Inspector: <input type="text" value="LAL"/> Call Date: <input type="text"/> Inspection Date: <input type="text" value="12/4/08"/> Response Due: <input type="text"/> Response Recvd: <input type="text"/>	
Response Information Inspector: <input type="text" value="LAL"/> Call Date: <input type="text"/> Inspection Date: <input type="text" value="12/4/08"/> Response Due: <input type="text"/> Response Recvd: <input type="text"/>		Comments: 12/3 - LAL discussed with Jeremy Bandy, WV DEP, Oak Ridge Field Office Supervisor 12/4 - no sheen observed on New River at New River bridge on US-460 at Glen Lyn; sheen stopped by afternoon; staff still searching for source 12/10 - sheen reappeared; AEP booming to contain, continuing to search for source 12/12 - Joe Ryder reported source IDed as bulk fuel containment area at upper edge of property; 12/17 - AEP discovered contamination beneath containment liner; BRRO-RO Remediation already made aware of release					

POLLUTION INCIDENT REPORT FORM

Return to Main Menu

Reporting Information Name: Frank Tanner, via NRC#895149 Affiliation: AEP Glen Lyn Plant Manager IR# 2009-W-0200		Incident Description Incident Date: 1/18/09 Incident Time: 03:00 AM Material Released: diesel Quantity Released: 2 Gallon In Water: 1	
Site Information Diesel release: <input checked="" type="checkbox"/> Facility Permitted: <input checked="" type="checkbox"/> Name: Glen Lyn Address: <input type="text"/> City: <input type="text"/> Zip: <input type="text"/>		Incident Summary: release of diesel fuel from pipes attached to fuel pumps; fuel got into a parking lot, then a storm drain; booms, absorbents applied, release secured	
Responsible Party Name: AEP Address: <input type="text"/> City: <input type="text"/> State: <input type="text"/> Zip: <input type="text"/>		Receiving Waters: New River Possible Receptors: New River Basin: New Topo Quad: Narrows	
Owner Name: <input type="text"/> Address: <input type="text"/> City: <input type="text"/> State: <input type="text"/> Zip: <input type="text"/>		Status: <input type="checkbox"/> Open <input type="checkbox"/> Closed Permitted/Registration/Case No.: <input type="text"/>	
Response Information Inspector: LAL/MLH Call Date: 1/20/09 Response Due: 1/23/09 Inspection Date: 1/23/09 Response Rcvd: <input type="text"/>		Referred: Air: <input type="text"/> Waste: <input type="text"/> Water: <input type="text"/> Remediation: <input type="text"/> Enforcement: <input type="text"/>	
Comments: <input style="width: 100%; height: 100%;" type="text"/>			

ATTACHMENT C
EFFLUENT SCREENING

1. DMR Data/Application Data
2. 316 Variance Rationale
3. List of Warning Letters
4. EPA Benchmark Values
5. Heat Load Calculation Chart
6. MIX.EXE Printouts
7. WLA Spreadsheets
8. TMP Data
9. WETLIM Spreadsheets

APCO Glen Lyn DMR Data
VPDES Permit No. VA0000370

OUTFALL 001

DMR Due Date	FLOW (mgd)		HEAT REJECTED (BTU**8/hr)
	Avg	Max	
10-Sep-2004	0.453	1.093	0.02
10-Oct-2004	0.358	0.389	0.02
10-Nov-2004	0.238	0.249	0.02
10-Dec-2004	0.17	0.258	0.02
10-Jan-2005	0.22	0.234	0.02
10-Feb-2005	0.234	0.243	0.025
10-Mar-2005	0.225	0.254	0.025
10-Apr-2005	0.225	0.247	0.023
10-May-2005	0.334	0.45	0.025
10-Jun-2005	0.375	0.549	0.023
10-Jul-2005	0.528	0.566	0.022
10-Aug-2005	0.557	0.589	0.018
10-Sep-2005	0.589	0.589	0.014
10-Oct-2005	0.62	0.658	0.03
10-Nov-2005	0.452	0.599	0.024
10-Dec-2005	0.207	0.223	0.025
10-Jan-2006	0.186	0.223	0.029
10-Feb-2006	0.206	0.243	0.027
10-Mar-2006	0.197	0.263	0.028
10-Apr-2006	0.252	0.298	0.026
10-May-2006	0.417	0.518	0.027
10-Jun-2006	0.43	0.618	0.026
10-Jul-2006	0.593	0.618	0.019
10-Aug-2006	0.53	0.618	0.025
10-Sep-2006	0.511	0.608	0.011
10-Oct-2006	0.489	0.599	0.025
10-Nov-2006	0.29	0.33	0.026
10-Dec-2006	0.273	0.345	0.024
10-Jan-2007	0.259	0.359	0.025
10-Feb-2007	0.198	0.243	0.026
10-Mar-2007	0.225	0.263	0.03
10-Apr-2007	0.34	0.386	0.025
10-May-2007	0.301	0.457	0.028
10-Jun-2007	NULL	NULL	NULL
10-Jul-2007	0.299	0.608	0.025
10-Aug-2007	0.576	0.648	0.017
10-Sep-2007	0.648	0.648	0.008
10-Oct-2007	0.621	0.648	0.027
10-Nov-2007	0.497	0.698	0.026
10-Dec-2007	0.241	0.315	0.026
10-Jan-2008	0.253	0.281	0.026
10-Feb-2008	0.235	0.281	0.027
10-Mar-2008	0.261	0.298	0.026
10-Apr-2008	0.476	0.578	0.029
10-May-2008	0.627	0.648	0.0301
10-Jun-2008	0.648	0.648	0.03
10-Jul-2008	0.573	0.744	0.022
10-Aug-2008	0.674	0.745	0.024
10-Sep-2008	0.676	0.745	0.022
10-Oct-2008	0.65	0.745	0.012
10-Nov-2008	0.254	0.272	0.024
10-Dec-2008	0.16	0.178	0.023
10-Jan-2009	0.173	0.213	0.024
10-Feb-2009	0.18	0.207	0.022
10-Mar-2009	0.171	0.205	0.024
10-Apr-2009	0.1333	0.254	0.027
10-May-2009	NULL	NULL	NULL

avg = 0.37
 30-day max avg = 0.676

OUTFALL 002

FLOW (mgd)		HEAT REJECTED (BTU**8/hr)
Avg	Max	
31.1	44.3	2.04
26.6	44.3	2.01
30.5	44.3	2.05
28.4	44.3	2.06
30.5	44.3	2.09
29.5	44.3	2.07
25.9	44.3	2.07
30.5	44.3	2.05
27.5	44.3	2.05
28.6	44.3	2.07
31.8	44.3	2
30.6	44.3	2
30.7	44.3	2
30.5	44.3	1.99
25.7	44.3	2.03
29	44	2.08
30.7	44.3	2.08
30.5	44.3	2.08
30.5	44.3	2.07
30.5	44.3	2.07
23.1	44.3	2.06
30.5	44.3	2.03
28.5	44.3	1.99
30.7	44.3	2
30.7	44.3	2.04
30.5	44.3	2.05
30.1	44.3	2.05
27.5	44.3	2.07
27.2	44.3	2.05
30.5	44.3	2.07
30.4	44.3	2.04
29.4	44.3	2.03
1.9	44.3	0.01
16.4	44.3	2.02
29.5	44.3	2.02
30.5	44.3	1.98
27.4	44.3	2.01
30.5	44.3	2.06
29.2	44.3	2.07
30.5	44.3	2.07
30.5	44.3	2.07
30.5	44.3	2.07
30.5	44.3	2.06
22.9	44.3	2.07
29	44.3	2.02
29.3	44.3	2.01
31.4	44.3	2.02
29.5	44.3	2.02
25.3	44.3	2.06
24	44.3	2.07
30.5	44.3	2.06
26.6	44.3	2.07
31.6	44.3	2.07
26.2	44.3	2.07
15.1	15.1	NR

28.22
 31.8

APCO Glen Lyn DMR Data
VPDES Permit No. VA0000370

OUTFALL 003

DMR Due Date	FLOW (mgd)		HEAT REJECTED (BTU**8/hr)
	Avg	Max	
10-Sep-2004	98.8	124	5.88
10-Oct-2004	90.9	124	6.04
10-Nov-2004	113.6	124	6.13
10-Dec-2004	89.9	124	6.58
10-Jan-2005	79.9	124	6.56
10-Feb-2005	78	124	6.44
10-Mar-2005	71.8	124	6.07
10-Apr-2005	79	124	5.89
10-May-2005	99.9	124	6.69
10-Jun-2005	70.9	124	6.13
10-Jul-2005	113.2	124	6.14
10-Aug-2005	107.4	124	6.26
10-Sep-2005	124	124	6.38
10-Oct-2005	124	124	6.41
10-Nov-2005	123.7	124	6.41
10-Dec-2005	60	124	6.33
10-Jan-2006	117.4	124	6.15
10-Feb-2006	65.2	124	6.36
10-Mar-2006	124	124	6.41
10-Apr-2006	124	124	6.68
10-May-2006	124	1240	6.21
10-Jun-2006	124	124	6.35
10-Jul-2006	122.1	124	6.15
10-Aug-2006	124	124	6.02
10-Sep-2006	124	124	6.15
10-Oct-2006	80.9	124	5.55
10-Nov-2006	38.8	124	5.68
10-Dec-2006	124	124	6.35
10-Jan-2007	83	124	6.48
10-Feb-2007	89.1	124	6.41
10-Mar-2007	123.9	124	6.87
10-Apr-2007	123.8	124	6.68
10-May-2007	124	124	6.87
10-Jun-2007	124	124	6.48
10-Jul-2007	123.2	124	6.35
10-Aug-2007	119.7	124	6.48
10-Sep-2007	124	124	6.48
10-Oct-2007	112.9	124	6.35
10-Nov-2007	96.5	124	6.21
10-Dec-2007	119.6	124	6.61
10-Jan-2008	99.6	124	6.41
10-Feb-2008	93.8	124	6.02
10-Mar-2008	123.8	124	6.61
10-Apr-2008	116.5	124	5.95
10-May-2008	122.11	124	6.02
10-Jun-2008	113.6	124	6.21
10-Jul-2008	123.8	124	6.35
10-Aug-2008	116.9	124	5.88
10-Sep-2008	69.8	124	5.95
10-Oct-2008	55.4	124	5.95
10-Nov-2008	5.6	124	6.21
10-Dec-2008	16.8	124	6.15
10-Jan-2009	21.3	124	6.61
10-Feb-2009	15.6	124	4.96
10-Mar-2009	82.8	124	4.89
10-Apr-2009	31.2	124	4.16
10-May-2009	NULL	NULL	NULL

Average 96.24
 30-day Max Average 124

OUTFALL 005

FLOW (mgd)		HEAT REJECTED (BTU**8/hr)
Avg	Max	
124.51	177.41	8.18
104.71	177.41	8.08
121.89	177.41	8.22
113.51	177.41	8.26
121.89	177.41	8.39
117.96	177.41	8.29
103.66	177.41	8.32
121.89	177.41	8.22
110.04	177.41	8.22
114.44	177.41	8.32
127.31	177.41	8.03
122.38	177.41	8.02
122.88	177.41	8.01
121.98	177.41	8
102.97	177.41	8.16
115.97	177.41	8.34
122.71	177.41	8.32
121.89	177.41	8.29
121.8	177.41	8.32
121.89	177.41	8.29
121.81	177.41	8.29
92.48	177.41	8.26
121.89	177.41	8.13
114.11	177.41	7.99
122.88	177.41	8.03
122.74	177.41	8.19
121.89	177.41	8.23
120.45	177.41	8.25
110.22	177.41	8.29
108.7	177.41	8.23
121.89	177.41	8.29
121.73	177.41	8.19
117.66	177.41	8.13
7.78	177.41	0.03
65.52	177.41	8.09
118.13	177.41	8.09
121.89	177.41	7.96
109.21	177.41	8.06
121.89	177.41	8.26
116.9	177.41	8.29
121.98	177.41	8.29
121.98	177.41	8.32
121.89	177.41	8.29
121.81	177.41	8.29
121.89	177.41	8.26
91.42	177.41	8.29
115.9	177.41	8.09
117.3	177.41	8.06
125.74	177.41	8.09
117.83	177.41	8.09
101.25	177.41	8.26
96.16	177.41	8.29
121.81	177.41	8.26
106.41	177.41	8.29
126.42	177.41	8.29
104.69	177.41	8.29
60.52	60.52	NR

112.83
 127.31

APCO Glen Lyn DMR Data
VPDES Permit No. VA0000370

Outfall 004

DMR Due Date	FLOW (mgd)		Oil & Grease (mg/l)		pH (s.u.)		TSS (mg/l)	
	Avg	Max	Avg	Max	Min	Max	Avg	Max
10-Sep-2004	2.098	2.443	5.0	5.0	7	7.4	23.1	35.5
10-Oct-2004	1.997	2.464			6.8	7.9	18.7	27.5
10-Nov-2004	2.26	2.43			7.1	7.2	10.9	18
10-Dec-2004	2.217	2.291			6.8	7.3	8.4	14.3
10-Jan-2005	3.273	3.315	<QL	<QL	7.2	7.6	19.6	39.9
10-Feb-2005	3.286	3.616			7.3	7.7	20.8	30
10-Mar-2005	3.021	3.267	<QL	<QL	7.6	8.1	13	29.6
10-Apr-2005	3.112	3.221			7.6	7.8	17	25.4
10-May-2005	2.896	3.158			7.7	7.8	12.8	19
10-Jun-2005	2.987	3.111			7.6	8.1	8	9.7
10-Jul-2005	3.245	3.366	<QL	<QL	7.7	8	7.4	11.4
10-Aug-2005	3.374	3.752			7.8	7.9	9.5	12.3
10-Sep-2005	3.443	3.763			7.6	7.9	7.8	14.4
10-Oct-2005	3.169	3.223	<QL	<QL	7.8	7.9	5.4	8.4
10-Nov-2005	3.12	3.393			7.6	7.8	7.4	9.3
10-Dec-2005	2.919	3.349			7.2	7.9	12	16.4
10-Jan-2006	3.181	3.513	<QL	<QL	7.3	7.7	14.6	32.4
10-Feb-2006	3.317	3.412			7.2	7.4	9.9	19.2
10-Mar-2006	3.272	3.36			7.2	7.7	14.9	28.4
10-Apr-2006	3.178	3.357			7.2	7.5	12.2	21.9
10-May-2006	3.191	3.261	<QL	<QL	7.3	7.5	15.5	24.5
10-Jun-2006	3.109	3.246			7	7.9	30.8	87.9
10-Jul-2006	3.422	3.502			7.5	8.2	10.6	14.4
10-Aug-2006	4.23	4.924	<QL	<QL	7.6	7.9	15.3	25.7
10-Sep-2006	4.083	5.786			7.6	7.9	20.3	28.7
10-Oct-2006	5.429	5.663			7.4	7.8	13	22.1
10-Nov-2006	5.06	5.654	<QL	<QL	7.2	7.7	14	22.6
10-Dec-2006	5.356	5.404			6.6	7.4	13.5	21.4
10-Jan-2007	5.325	5.711			6.43	7.61	22.6	41.5
10-Feb-2007	5.47	5.697	<QL	<QL	6.33	6.93	18	54.9
10-Mar-2007	5.337	5.454			6.61	7.23	23	54.3
10-Apr-2007	5.405	5.427			7.29	7.75	13.8	18.2
10-May-2007	5.107	5.398	<QL	<QL	6.99	7.67	20.2	26.8
10-Jun-2007	2.79	4.969			6.99	7.49	12.4	28.7
10-Jul-2007	1.349	2.089			6.61	6.92	14.2	15.7
10-Aug-2007	1.236	1.422	<QL	<QL	6.69	7.84	14.9	18.8
10-Sep-2007	1.145	1.228			6.98	7.64	19.9	22.9
10-Oct-2007	1.034	1.407			7.55	7.86	11.6	14.7
10-Nov-2007	1.093	1.195	<QL	<QL	6.79	7.47	8.9	15.2
10-Dec-2007	1.431	2.14			6.85	7.25	12.8	15.8
10-Jan-2008	2.019	2.241			6.85	7.54	21.7	32.1
10-Feb-2008	1.993	2.307	<QL	<QL	6.98	7.41	23.7	77.4
10-Mar-2008	1.85	2.251			6.75	7.58	21.3	33.8
10-Apr-2008	1.802	1.927			6.62	6.92	13.7	27.3
10-May-2008	1.815	1.891	<QL	<QL	6.54	6.89	17.95	23.4
10-Jun-2008	1.633	1.978			6.96	8.19	17.7	23.7
10-Jul-2008	1.825	2.102			7.81	8.26	16.3	22.9
10-Aug-2008	2.04	2.167	<QL	<QL	7.82	7.91	19.5	30.8
10-Sep-2008	2.002	2.077			7.81	8.07	12.86	16.05
10-Oct-2008	2.052	2.085			7.6	7.93	11.66	15.55
10-Nov-2008	1.835	1.908	<QL	<QL	7.67	8.4	7.1	11
10-Dec-2008	1.79	2.18			7.58	7.92	47.89	201.75
10-Jan-2009	1.92	2.02			7.48	8.08	9.34	19.2
10-Feb-2009	1.82	1.931	<QL	<QL	7.4	8.04	15.14	26.05
10-Mar-2009	1.9	2.02			7.4	7.62	16.1	20.1
10-Apr-2009	1.72	1.93			7.47	7.76	11.38	19.25
10-May-2009	1.44	1.68	<QL	<QL	7.72	8.07	5.56	8.25

APCO Glen Lyn DMR Data
VPDES Permit No. VA0000370

Outfall 007

DMR Due Date	FLOW (mgd)		Oil & Grease (mg/l)		pH (s.u.)		TSS (mg/l)	
	Avg	Max	Avg	Max	Min	Max	Avg	Max
10-Sep-2004	0.01479	0.04441			7.2	7.6	2	3.9
10-Oct-2004	0.03048	0.07875	<QL	<QL	7.3	7.7	1.2	1.9
10-Nov-2004	0.0188	0.0279			7.2	7.6	<QL	2
10-Dec-2004	0.0199	0.0292			7.3	7.6	<QL	1.5
10-Jan-2005	0.0729	0.2308	<QL	<QL	7.1	7.6	<QL	3.3
10-Feb-2005	0.0304	0.043			7.1	8.1	1.1	2
10-Mar-2005	0.0382	0.0617	<QL	<QL	8.1	8.3	1.3	1.3
10-Apr-2005	0.0599	0.1535			8.1	8.5	<QL	1.3
10-May-2005	0.0298	0.056			8	8.1	<QL	1.3
10-Jun-2005	0.0192	0.0374			7.9	8	3.3	7.5
10-Jul-2005	0.0083	0.0183	<QL	<QL	7.4	8.1	<QL	1.4
10-Aug-2005	0.0054	0.0077			7.8	8	2.1	2.9
10-Sep-2005	0.0032	0.006			7.8	8	0.8	2
10-Oct-2005	0.0074	0.0106	<QL	<QL	8	8.1	1	2.1
10-Nov-2005	0.0057	0.0097			7.8	8	<QL	<QL
10-Dec-2005	0.0107	0.0311			7.8	8	0.3	1.3
10-Jan-2006	0.0193	0.396	<QL	<QL	7.8	8.1	1.3	3.4
10-Feb-2006	0.0223	0.0305			7.9	8.2	2.1	3.5
10-Mar-2006	0.0207	0.0367			8.1	8.2	0.43	1.7
10-Apr-2006	0.0123	0.0168			8.2	8.5	<QL	<QL
10-May-2006	0.0395	0.0595	<QL	<QL	8	8.4	<QL	<QL
10-Jun-2006	0.0089	0.0141			7.8	8	0.3	1.5
10-Jul-2006	0.0466	0.1527			7.7	8.1	4.6	18.5
10-Aug-2006	0.0139	0.0236	<QL	<QL	7.9	7.9	1.8	2.3
10-Sep-2006	0.0097	0.0218			7.6	7.9	3	5.8
10-Oct-2006	0.0122	0.0189			7.7	7.9	4.2	5
10-Nov-2006	0.0226	0.0356	<QL	<QL	7.8	8	<QL	1.6
10-Dec-2006	0.0243	0.0487			7.6	8	1	1.7
10-Jan-2007	0.0142	0.0189			7.51	7.8	1.4	1.6
10-Feb-2007	0.0783	0.1433	<QL	<QL	7.32	7.55	1.9	3.2
10-Mar-2007	0.0228	0.0355			7.37	7.55	1.2	1.3
10-Apr-2007	0.0259	0.0301			7.38	8.05	1.6	2.7
10-May-2007	0.0212	0.0406	<QL	<QL	7.53	7.76	<QL	1.3
10-Jun-2007	0.0182	0.0436			7.23	7.32	<QL	1.2
10-Jul-2007	0.0126	0.0415			7.11	7.38	1	2.2
10-Aug-2007	0.003	0.007	<QL	<QL	7.35	7.62	2.5	3.9
10-Sep-2007	0.0039	0.006			7.24	7.92	1.83	5.5
10-Oct-2007	0.0018	0.0019			7.76	7.86	2.5	4.1
10-Nov-2007	0.0058	0.0209	<QL	<QL	7.71	7.92	2.3	4.3
10-Dec-2007	0.0111	0.0175			7.73	7.85	1	2.5
10-Jan-2008	0.0476	0.0957			7.61	7.79	2.2	3.4
10-Feb-2008	0.0421	0.0573	<QL	<QL	7.52	7.74	2.2	4.4
10-Mar-2008	0.0286	0.043			7.42	7.64	0.43	1.7
10-Apr-2008	0.0227	0.051			7.46	7.82	<QL	1.5
10-May-2008	0.0212	0.0406	<QL	1.5	7.53	7.82	0.93	1.3
10-Jun-2008	0.0265	0.034			7.19	8.13	0.6	1.2
10-Jul-2008	0.0035	0.0066			7.76	8.08	1.43	2.3
10-Aug-2008	0.0193	0.0403	<QL	<QL	7.81	8.13	2.2	3.3
10-Sep-2008	0.0036	0.0103			7.78	8.03	1.99	2.45
10-Oct-2008	0.002	0.0022			7.83	8.03	0.21	1.05
10-Nov-2008	0.006	0.0189	<QL	<QL	8.06	8.2	0.5	1.4
10-Dec-2008	0.0022	0.0037			8.03	8.13	3.69	14.75
10-Jan-2009	0.009	0.0288			7.53	8.18	0.51	1.85
10-Feb-2009	0.0365	0.0508	<QL	<QL	7.96	8.1	1.3	1.7
10-Mar-2009	0.0389	0.0467			7.9	8.07	0.6	1.25
10-Apr-2009	0.103	0.3			8.01	8.13	1.59	2.8
10-May-2009	0.0596	0.1152	<QL	<QL	8.04	8.15	0.33	1.3

average 0.02
max 30-day avg 0.103

APCO Glen Lyn DMR Data
VPDES Permit No. VA0000370

Outfall 999

DMR Due Date	HEAT REJECTED (BTU**8/hr)
10-Sep-2004	7.94
10-Oct-2004	7.87
10-Nov-2004	7.87
10-Dec-2004	8.59
10-Jan-2005	8.45
10-Feb-2005	8.42
10-Mar-2005	6.11
10-Apr-2005	7.93
10-May-2005	8.54
10-Jun-2005	7.2
10-Jul-2005	8.26
10-Aug-2005	8.21
10-Sep-2005	8.25
10-Oct-2005	8.33
10-Nov-2005	8.3
10-Dec-2005	6.64
10-Jan-2006	8.16
10-Feb-2006	8.37
10-Mar-2006	8.47
10-Apr-2006	8.77
10-May-2006	8.27
10-Jun-2006	8.28
10-Jul-2006	8.17
10-Aug-2006	7.69
10-Sep-2006	8.13
10-Oct-2006	7.52
10-Nov-2006	7.45
10-Dec-2006	8.27
10-Jan-2007	8.56
10-Feb-2007	8.48
10-Mar-2007	8.97
10-Apr-2007	8.53
10-May-2007	8.77
10-Jun-2007	6.49
10-Jul-2007	8.26
10-Aug-2007	8.5
10-Sep-2007	8.44
10-Oct-2007	8.38
10-Nov-2007	8.19
10-Dec-2007	8.69
10-Jan-2008	8.32
10-Feb-2008	8.1
10-Mar-2008	8.32
10-Apr-2008	8.02
10-May-2008	8
10-Jun-2008	8.31
10-Jul-2008	8.33
10-Aug-2008	7.84
10-Sep-2008	7.96
10-Oct-2008	7.812
10-Nov-2008	8.28
10-Dec-2008	8.19
10-Jan-2009	8.66
10-Feb-2009	6.86
10-Mar-2009	6.98
10-Apr-2009	5.53
10-May-2009	NULL

OUTFALL 001 Application Data

	WQ Criteria acute/chronic	WLA acute/chronic	001 mg/l	Site Specific QL
chloride	860 / 230	13,000 / 200,000	71.4	5,200
sulfate	NA		17.9	
barium	NA		0.0277	
iron	NA		0.047	
magnesium	NA		8.55	
molybdenum	NA		0.0013	
manganese	NA		0.006	
titanium	NA		0.0013	
			<u>ug/l</u>	
copper	9.4 / 6.5	140 / 5,700	5.9	56
lead	73 / 8.3	1100 / 7,300	0.3	440
silver	1.8 / NA	27 / NA	1.1	11
zinc	85 / 85	1300 / 75,000	28.7	520

Note: All metals data is for total metals (WQ criteria are written for dissolved metals)
No data "suitable" for limit evaluation.

OUTFALL 002 Application Data

	WQ Criteria acute/chronic	WLA acute/chronic	002 mg/l	Site Specific QL
chloride	860 / 230	900 / 1,300	6.51	360
sulfate	NA		16.2	
barium	NA		0.0235	
iron	NA		0.049	
magnesium	NA		7.62	
manganese	NA		0.008	
titanium	NA		0.0013	
			<u>ug/l</u>	
copper	9.4 / 6.5	9.9 / 37	2	4
lead	73 / 8.3	77 / 47	0.2	28
silver	1.8 / NA	1.9 / NA	1.1	0.8

Note: All metals data is for total metals (WQ criteria are written for dissolved metals)
No data "suitable" for limit evaluation.

OUTFALL 003 Application Data

	WQ Criteria acute/chronic	WLA acute/chronic	003 mg/l	Site Specific QL
chloride	860 / 230	900 / 1,300	6.39	360
sulfate	NA		16.3	
barium	NA		0.0237	
iron	NA		0.04	
magnesium	NA		78.1	
molybdenum	NA		0.0017	
manganese	NA		0.006	
titanium	NA		0.0012	
			<u>ug/l</u>	
antimony	4300 (HH)	23,000	0.3	23,000
copper	9.4 / 6.5	9.6 / 18	5.6	3.8
lead	73 / 8.3	75 / 23	0.4	13.8
zinc	85 / 85	87 / 230	23.4	34.8

Note: All metals data is for total metals (WQ criteria are written for dissolved metals)
No data "suitable" for limit evaluation.

OUTFALL 004 Application Data

	WQ Criteria acute/chronic	WLA acute/chronic	004 mg/l	Site Specific QL
chloride	860 / 230	19,000 / 5200	39.7	3,120
sulfate	NA		24.8	
aluminum	NA		0.13	
barium	NA		0.066	
iron	NA		0.172	
magnesium	NA		8.55	
molybdenum	NA		0.0012	
manganese	NA		0.012	
titanium	NA		0.005	
			<u>ug/l</u>	
antimony	4300 (HH)	98000	0.3	98000
arsenic	340 / 150	7600 / 3400	3	2040
chromium	NA		1	
copper	9.4 / 6.5	210 / 150	1.1	84
lead	73 / 8.3	1600 / 190	0.4	114
zinc	85 / 85	1900 / 1900	5.2	760

Note: All metals data is for total metals (WQ criteria are written for dissolved metals)
No data "suitable" for limit evaluation.

OUTFALL 005 Application Data

	WQ Criteria acute/chronic	WLA acute/chronic	005 mg/l	Site Specific QL
chloride	860 / 230	880 / 240	6.52	144
sulfate	NA		16.2	
barium	NA		0.023	
iron	NA		0.047	
magnesium	NA		8.06	
manganese	NA		0.007	
titanium	NA		0.0011	
			<u>ug/l</u>	
copper	9.4 / 6.5	9.6 / 6.7	2.8	3.8
lead	73 / 8.3	75 / 8.6	0.6	5.2
silver	1.8 / NA	1.8 / NA	1.1	0.72
zinc	85 / 85	87 / 89	6.6	34.8

Note: All metals data is for total metals (WQ criteria are written for dissolved metals)
No data "suitable" for limit evaluation.

OUTFALL 006 Application Data

No data available; no discharge from this outfall

OUTFALL 007 Application Data

	WQ Criteria acute/chronic	WLA acute/chronic	007 mg/l	Site Specific QL
chloride	860 / 230	34,000 / 650,000	9.08	13,600
sulfate	NA		255	
barium	NA		0.134	
boron	NA		1.19	
cobalt	NA		0.001	
iron	NA		0.171	
magnesium	NA		38.9	
molybdenum	NA		0.0377	
manganese	NA		1.67	
titanium	NA		0.0051	
			<u>ug/l</u>	
antimony	4300 (HH)	2.8 x 10 ⁷	0.5	2.8 x 10 ⁷
arsenic	340 / 150	14,000 / 420,000	100	5,600
silver	1.8 / NA	71 / NA	1.1	28

Note: All metals data is for total metals (WQ criteria are written for dissolved metals)
No data "suitable" for limit evaluation.

OUTFALL 008 Application Data

No data available; this outfall has not yet been constructed

SECTION 316(a) and (b) RATIONALE

The thermal component of the discharge is subject to compliance with Virginia Water Quality Standards in Sections VR680-21-01.5 through VR680-21-01.8 and VR680-21-07.1. Notwithstanding these requirements, Section 316(a) of the Clean Water Act (the Act) allows the permitting authority to impose alternative and less stringent thermal limitations after demonstration that the water quality standards limitations are more stringent than necessary to assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on the receiving water. In addition, Section 316(b) of the Act requires that the location, design, construction, and capacity of a cooling water intake structure reflect the best technology available for minimizing environmental impacts.

Appalachian Power Company requested a 316(a) variance for the Glen Lyn Plant on May 19, 1977. The variance was approved by the SWCB on December 22, 1977, based on successful 316(a) demonstration that alternative thermal limitations will assure the protection and propagation of a balanced indigenous population of aquatic species and wildlife in and on the New River.

On January 11, 1994, as part of the application for reissuance of the VPDES Permit, the permittee requested that the 316(a) variance be continued based on their belief that conditions have not changed since the approval date. As required by a special condition in the current permit (effective date July 10, 1989), the permittee responded to a request to verify that the plant operating conditions and load factors were unchanged and expected to remain so for the permit term, that there were no changes to plant discharges or other discharges in the plant site area which could interact with the thermal discharges, and determined that there were no known changes to the biotic community of the receiving water body which would impact the previous 316(a) determinations. It was noted in the application for reissuance that two changes to plant discharges have been made. One resulted in the elimination of the sanitary sewage package plant discharge (Outfall 501), and the other resulted in the partial elimination of cooling water flows to Outfall 001 (elimination of water cooled transformer discharges). However, these changes have not altered the thermal discharges from the condensers (which are the streams affected by the section 316(a) variance).

The SWCB approved the section 316(b) demonstration on October 25, 1978. It has been tentatively determined that the cooling water intake structure continues to reflect best technology available and the Department of Environmental Quality proposes no changes to the intake at this time.

APCO Glen Lyn
List of Permit Violations/Warning Letters/NOVs (May 2006 - Present)

Permit No	Year	Month	Dmr Due Date	W/L/NOV	Item	Param No.	Param Name	Requirement	Reported
VA0000370	2006	MAY	10-Jun-2006	NULL	CONCAVG	004	TSS	30	30.8
VA0000370	2006	JUL	10-Aug-2006	W2006-09-W-1001	DMR due 08/10/2006 missing DMR.	NULL	NULL	NULL	NULL
VA0000370	2006	JUL	10-Aug-2006	W2006-09-W-1001	DMR due 08/10/2006 missing DMR.	NULL	NULL	NULL	NULL
VA0000370	2006	NOV	10-Dec-2006	W2007-01-W-1001	Oil Discharge (Hydraulic Fluid)(5X8Ft. visible sheen)...UPD(1/06/2006)Loc: Plant(Intake structure); Approx.Vol.: <1oz; Cause: Equip.Failure; Rec.Str.: New River; Ltr.dtd.: 11/13/2006 & Ltr.Rec.: 11/14/2006	NULL	NULL	NULL	NULL
VA0000370	2006	NOV	10-Dec-2006	NULL	Letter not received	NULL	NULL	NULL	NULL
VA0000370	2007	FEB	10-Feb-2007	W2007-05-W-1001	QUARTERLY PARAMETER NOT REPORTED	196	ZINC, TOTAL RECOVERABLE	NULL	NULL
VA0000370	2007	FEB	10-Feb-2007	W2007-05-W-1001	Incomplete DMR (Determined 03/20/2007)	NULL	NULL	NULL	NULL
VA0000370	2007	FEB	10-Feb-2007	W2007-05-W-1001	QUARTERLY PARAMETER NOT REPORTED	185	NICKEL, TOTAL RECOVERABLE	NULL	NULL
VA0000370	2008	JUL	10-Aug-2008	W2008-09-W-1002	Incomplete DMR (less than 25% data missing)	NULL	NULL	NULL	NULL
VA0000370	2008	NOV	10-Dec-2008	W2009-01-W-1001	CONCMAX	004	TSS	96	201.75
VA0000370	2008	NOV	10-Dec-2008	W2009-01-W-1001	CONCAVG	004	TSS	30	47.89
VA0000370	2006	JUN	NULL	W2006-09-W-1001	Oil Discharge (no visible sheen)...UPD(06/13/2006)Loc: Plant(Intake structure); Approx.Vol.: 2-3 gal; Cause: Equip.Failure; Rec.Str.: New River; Ltr.dtd.: 06/16/2006 & Ltr.Rec.: 06/19/2006	NULL	NULL	NULL	NULL
VA0000370	2009	JAN	NULL	NULL	UPD (1-18-09) Loc: No. 2 fuel oil piping feeding unit #6 (via outfall 901); approx volume: 2 gals; cause: failed weld joint caused oil to spray; rec stream: New River; ltr dtd 1-21-09 & ltr rec 1-22-09	NULL	NULL	NULL	NULL
VA0000370	2008	AUG	NULL	W2008-10-W-1001	Compliance schedule: TMP - ANNUAL (CHRONIC)	NULL	NULL	08/10/2008	NULL
VA0000370	2008	AUG	NULL	NULL	Compliance schedule: TMP - ANNUAL (ACUTE)	NULL	NULL	08/10/2008	NULL
VA0000370	2008	AUG	NULL	W2008-10-W-1001	Compliance schedule: TMP - ANNUAL (ACUTE)	NULL	NULL	08/10/2008	NULL

Parameter Benchmark Values

Parameter Name	Benchmark Level	Source
Biochemical Oxygen Demand(5 day)	30 mg/L	4
Chemical Oxygen Demand	120 mg/L	5
Total Suspended Solids	100 mg/L	7
Oil and Grease	15 mg/L	8
Total Organic Carbon (added by DEQ)	110 mg/L	8
Total Kjeldahl Nitrogen (added by DEQ)	1.5 mg/L	7
Nitrate + Nitrite Nitrogen	0.68 mg/L	7
Total Phosphorus	2.0 mg/L	6
pH	6.0-9.0 s.u.	4
Acrylonitrile (c)	7.55 mg/L	2
Aluminum, Total (pH 6.5-9)	0.75 mg/L	1
Ammonia	19 mg/L	1
Antimony, Total	0.636 mg/L	9
Arsenic, Total (c)	0.16854 mg/L	9
Benzene	0.01 mg/L	10
Beryllium, Total (c)	0.13 mg/L	2
Butylbenzyl Phthalate	3 mg/L	3
Cadmium, Total (H)	0.0159 mg/L	9
Chloride	860 mg/L	1
Copper, Total (H)	0.0636 mg/L	9
Dimethyl Phthalate	1.0 mg/L	11
Ethylbenzene	3.1 mg/L	3
Fluoranthene	0.042 mg/L	3
Fluoride	1.8 mg/L	6
Iron, Total	1.0 mg/L	12
Lead, Total (H)	0.0816 mg/L	1
Manganese	1.0 mg/L	13
Mercury, Total	0.0024 mg/L	1
Nickel, Total (H)	1.417 mg/L	1
PCB-1016 (c)	0.000127 mg/L	9
PCB-1221 (c)	0.10 mg/L	10
PCB-1232 (c)	0.000318 mg/L	9
PCB-1242 (c)	0.00020 mg/L	10
PCB-1248 (c)	0.002544 mg/L	9
PCB-1254 (c)	0.10 mg/L	10
PCB-1260 (c)	0.000477 mg/L	9
Phenols, Total	1.0 mg/L	11
Pyrene (PAH,c)	0.01 mg/L	10
Selenium, Total (*)	0.2385 mg/L	9
Silver, Total (H)	0.0318 mg/L	9
Toluene	10.0 mg/L	3
Trichloroethylene (c)	0.0027 mg/L	3
Zinc, Total (H)	0.117 mg/L	1

Sources

1. "EPA Recommended Ambient Water Quality Criteria." Acute Aquatic Life Freshwater
2. "EPA Recommended Ambient Water Quality Criteria." LOEL Acute Freshwater
3. "EPA Recommended Ambient Water Quality Criteria." Human Health Criteria for Consumption of Water and Organisms
4. Secondary Treatment Regulations (40 CFR 133)
5. Factor of 4 times BOD5 concentration - North Carolina benchmark
6. North Carolina storm water benchmark derived from NC Water Quality Standards
7. National Urban Runoff Program (NURP) median concentration
8. Median concentration of Storm Water Effluent Limitation Guideline (40 CFR Part 419)
9. Minimum Level (ML) based upon highest Method Detection Limit (MDL) times a factor of 3.18
10. Laboratory derived Minimum Level (ML)
11. Discharge limitations and compliance data
12. "EPA Recommended Ambient Water Quality Criteria." Chronic Aquatic Life Freshwater
13. Colorado - Chronic Aquatic Life Freshwater Water Quality Criteria

Notes:

- (*) Limit established for oil and gas exploration and production facilities only
- (c) carcinogen
- (H) hardness dependent
- (PAH) Polynuclear Aromatic Hydrocarbon

Assumptions:

- Receiving water temperature - 20 C
- Receiving water pH - 7.8
- Receiving water hardness CaCO3 - 100 mg/L
- Receiving water salinity - 20 g/kg
- Acute to Chronic Ratio (ACR) - 10

GLEN LYN PLANT - UNIT #6

TO OBTAIN BTU TO RIVER

ASSUME DESIGN CONDITIONS

Circulating water flow = 152,000 gpm
Temperature rise through condenser = 13.5°F
BTU lost by steam condensed = 970 btu/lb.
Weight of water per gallon = 8.345 #/gal.

I. Steam condenser^d #/hr. = (Circ. water flow, gpm X temp. rise thru condenser) X
min/hr. X lbs. of H₂O per gallon) ÷ BTU lost by steam
condensed
= $\frac{152,000 \text{ gpm} \times 13.5^\circ \times 60 \text{ min.} \times 8.345 \text{ #/gal.}}{970 \text{ BTU/# steam}}$
= 1,059,213 #/hr. of steam condensed

II. Pounds of steam per KWH = $\frac{\text{\#/hr. of steam condensed}}{\text{KW}}$
= $\frac{1,059,213}{250,000} = 4.24 \text{ # steam/KW}$

III. Maximum BTU to river under original calculation:

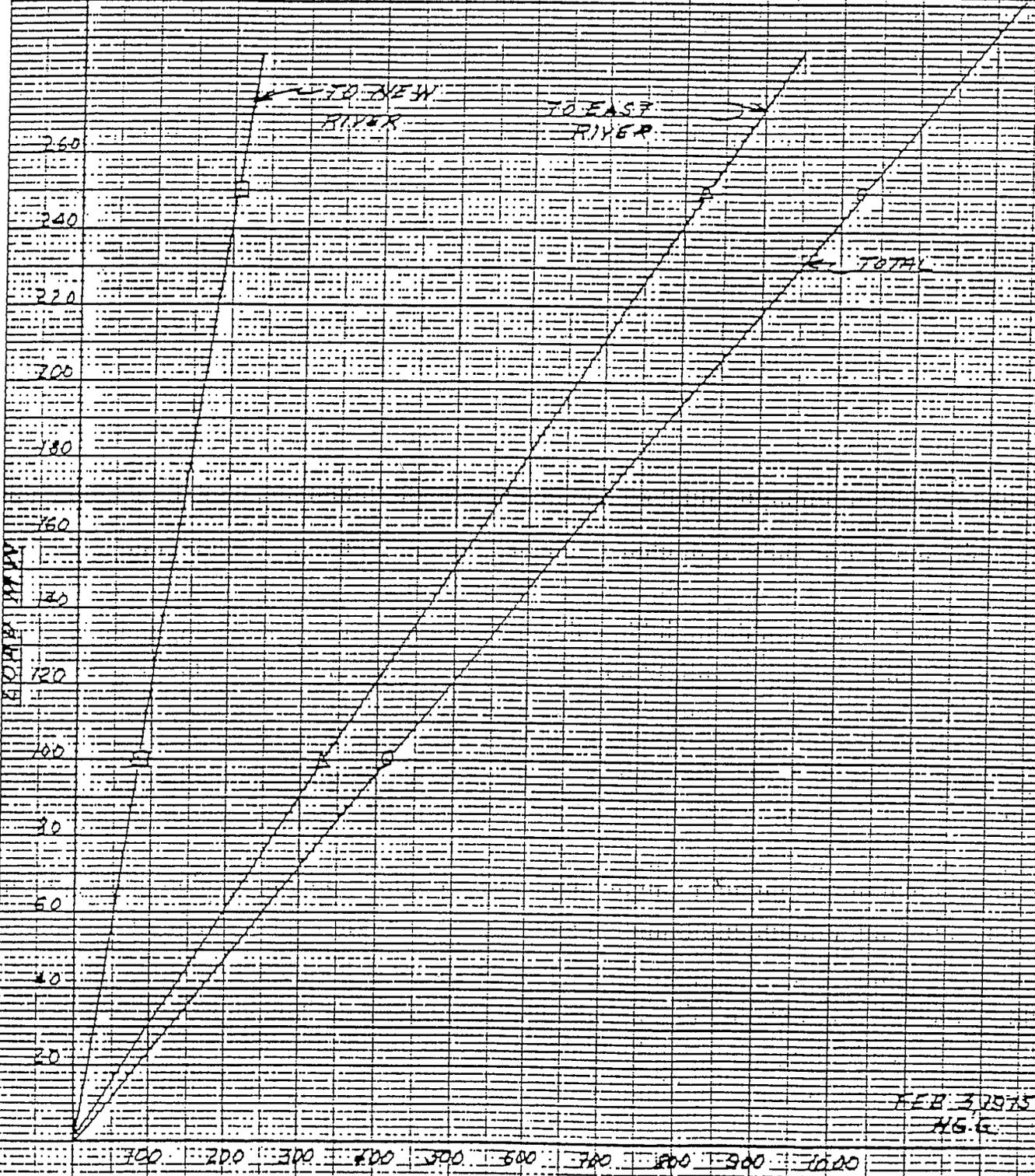
$4.24 \times 970 \times 252,000 = 1036 \times 10^6 \text{ BTU/hr.}$
(1040 X 10⁶ BTU/hr. was used)

UNIT 6

LOAD IN MW VS BTU TO RIVERS

20% TO NEW RIVER

30% TO EAST RIVER

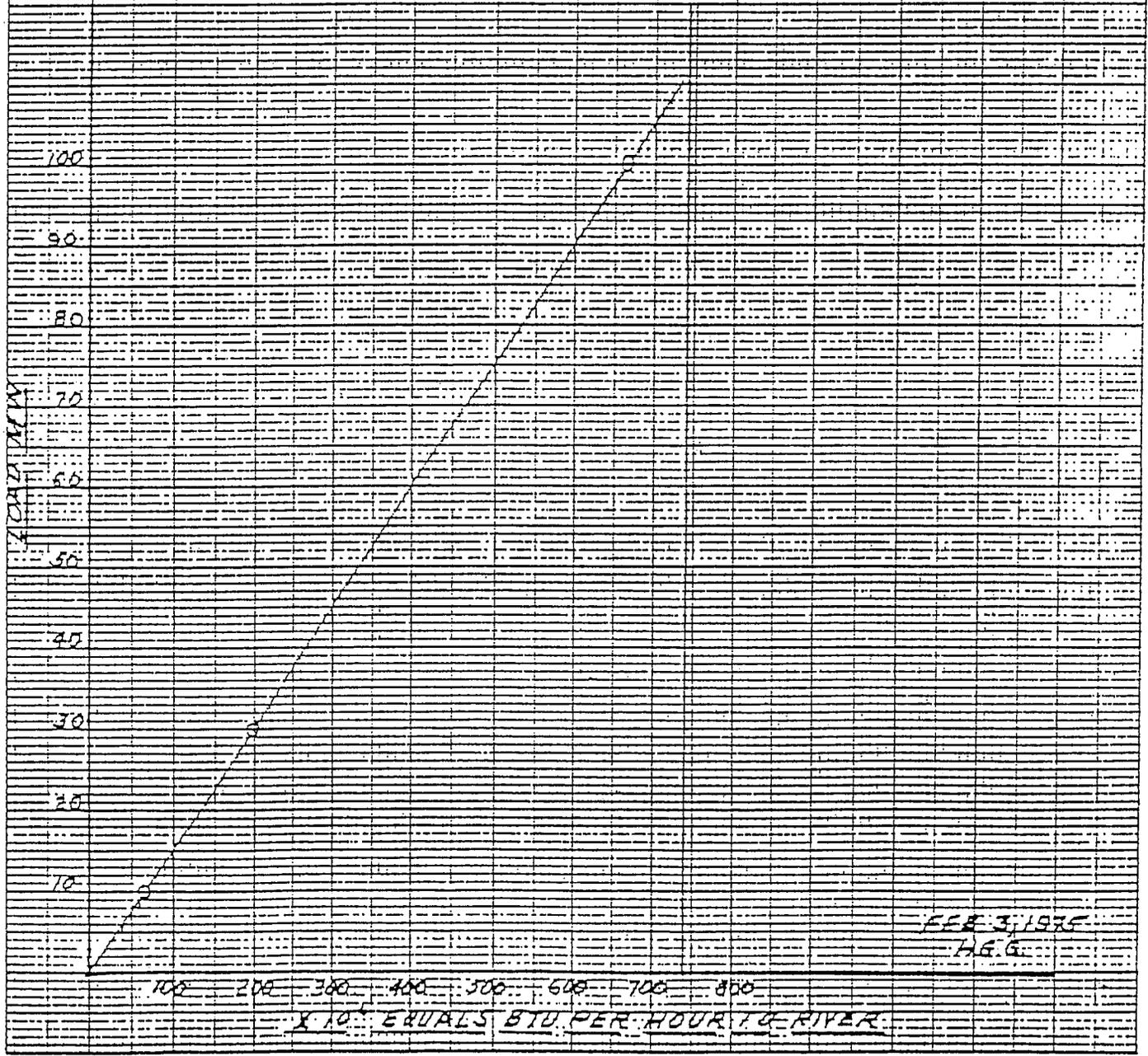


FEB 3 1975
H.S.G.

X 10⁶ EQUALS BTU PER HOUR TO RIVERS

MINUTE & HOUR
OF RECORDING
BY

UNIT 5
LOAD IN NEW'S BTU TO
NEW RIVER



FEB 3, 1976
H.G.

KEULART & BERRY CO.
MEMPHIS, TENNESSEE
FORM NO. P. 1. 1

X 10⁶ EQUALS BTU PER HOUR TO RIVER

Mixing Zone Predictions for

APCO Glen Lyn 001 Dry

Effluent Flow = 0.37 MGD
Stream 7Q10 = 653 MGD
Stream 30Q10 = 775 MGD
Stream 1Q10 = 565 MGD
Stream slope = 0.001 ft/ft
Stream width = 560 ft
Bottom scale = 3
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = 2.3792 ft
Length = 144595.4 ft
Velocity = .7591 ft/sec
Residence Time = 2.2046 days

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 90.72% of the 7Q10 is used.

Mixing Zone Predictions @ 30Q10

Depth = 2.6376 ft
Length = 132613.26 ft
Velocity = .8126 ft/sec
Residence Time = 1.8888 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = 2.1808 ft
Length = 155551.11 ft
Velocity = .7166 ft/sec
Residence Time = 60.2945 hours

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 1.66% of the 1Q10 is used.

Mixing Zone Predictions for

APCO Glen Lyn 001 Wet

Effluent Flow = 0.676 MGD
Stream 7Q10 = 1034 MGD
Stream 30Q10 = 1396 MGD
Stream 1Q10 = 762 MGD
Stream slope = 0.001 ft/ft
Stream width = 560 ft
Bottom scale = 3
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = 3.1383 ft
Length = 114595.36 ft
Velocity = .9114 ft/sec
Residence Time = 1.4553 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = 3.7605 ft
Length = 98416.97 ft
Velocity = 1.0267 ft/sec
Residence Time = 1.1095 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = 2.6115 ft
Length = 133723.31 ft
Velocity = .8073 ft/sec
Residence Time = 46.0123 hours

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 2.17% of the 1Q10 is used.

Mixing Zone Predictions for

APCO Glen Lyn 002

Effluent Flow = 31.8 MGD
Stream 7Q10 = 300.9 MGD
Stream 30Q10 = 422.9 MGD
Stream 1Q10 = 212.9 MGD
Stream slope = 0.001 ft/ft
Stream width = 560 ft
Bottom scale = 3
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = 1.5852 ft
Length = 203203.24 ft
Velocity = .5802 ft/sec
Residence Time = 4.0539 days

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 49.34% of the 7Q10 is used.

Mixing Zone Predictions @ 30Q10

Depth = 1.9129 ft
Length = 173616. ft
Velocity = .6571 ft/sec
Residence Time = 3.0582 days

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 65.4% of the 30Q10 is used.

Mixing Zone Predictions @ 1Q10

Depth = 1.3178 ft
Length = 237171.24 ft
Velocity = .5133 ft/sec
Residence Time = 128.3552 hours

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than .78% of the 1Q10 is used.

Mixing Zone Predictions for

APCO Glen Lyn 002 Wet

Effluent Flow = 31.8 MGD
Stream 7Q10 = 681.9 MGD
Stream 30Q10 = 1043.9 MGD
Stream 1Q10 = 409.9 MGD
Stream slope = 0.001 ft/ft
Stream width = 560 ft
Bottom scale = 3
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = 2.5092 ft
Length = 138285.42 ft
Velocity = .7863 ft/sec
Residence Time = 2.0356 days

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 98.25% of the 7Q10 is used.

Mixing Zone Predictions @ 30Q10

Depth = 3.2127 ft
Length = 112359.17 ft
Velocity = .9256 ft/sec
Residence Time = 1.4051 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = 1.8798 ft
Length = 176172.94 ft
Velocity = .6495 ft/sec
Residence Time = 75.3425 hours

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 1.33% of the 1Q10 is used.

Mixing Zone Predictions for

APCO Glen Lyn 003

Effluent Flow = 124 MGD
Stream 7Q10 = 329.1 MGD
Stream 30Q10 = 451.1 MGD
Stream 1Q10 = 241.1 MGD
Stream slope = 0.001 ft/ft
Stream width = 560 ft
Bottom scale = 3
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = 1.9088 ft
Length = 173924.94 ft
Velocity = .6562 ft/sec
Residence Time = 3.0679 days

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 65.19% of the 7Q10 is used.

Mixing Zone Predictions @ 30Q10

Depth = 2.2033 ft
Length = 154217.71 ft
Velocity = .7215 ft/sec
Residence Time = 2.4739 days

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 80.85% of the 30Q10 is used.

Mixing Zone Predictions @ 1Q10

Depth = 1.6763 ft
Length = 193915.01 ft
Velocity = .6021 ft/sec
Residence Time = 89.4691 hours

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 1.12% of the 1Q10 is used.

Mixing Zone Predictions for

APCO Glen Lyn 003 Wet

Effluent Flow = 124 MGD
Stream 7Q10 = 684.1 MGD
Stream 30Q10 = 1072.1 MGD
Stream 1Q10 = 412.1 MGD
Stream slope = 0.001 ft/ft
Stream width = 560 ft
Bottom scale = 3
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = 2.704 ft
Length = 129870.74 ft
Velocity = .8261 ft/sec
Residence Time = 1.8196 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = 3.4249 ft
Length = 106474.42 ft
Velocity = .9654 ft/sec
Residence Time = 1.2765 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = 2.1121 ft
Length = 159779.97 ft
Velocity = .7016 ft/sec
Residence Time = 63.2586 hours

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 1.58% of the 1Q10 is used.

Mixing Zone Predictions for

APCO Glen Lyn 004

Effluent Flow = 5.47 MGD
Stream 7Q10 = 117.4 MGD
Stream 30Q10 = 118.7 MGD
Stream 1Q10 = 116.5 MGD
Stream slope = 0.001 ft/ft
Stream width = 55 ft
Bottom scale = 3
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = 3.6818 ft
Length = 896.51 ft
Velocity = .9393 ft/sec
Residence Time = .011 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire
7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = 3.706 ft
Length = 891.21 ft
Velocity = .9429 ft/sec
Residence Time = .0109 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire
30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = 3.6648 ft
Length = 900.32 ft
Velocity = .9367 ft/sec
Residence Time = .267 hours

Recommendation:

A complete mix assumption is appropriate for this situation and the entire
1Q10 may be used.

Mixing Zone Predictions for

APCO GLen Lyn 005

Effluent Flow = 127.3 MGD
Stream 7Q10 = 4.6 MGD
Stream 30Q10 = 5.9 MGD
Stream 1Q10 = 3.7 MGD
Stream slope = 0.001 ft/ft
Stream width = 55 ft
Bottom scale = 3
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = 3.8501 ft
Length = 860.66 ft
Velocity = .9642 ft/sec
Residence Time = .0103 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = 3.874 ft
Length = 855.79 ft
Velocity = .9677 ft/sec
Residence Time = .0102 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = 3.8335 ft
Length = 864.05 ft
Velocity = .9618 ft/sec
Residence Time = .2496 hours

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used.

Mixing Zone Predictions for

APCO Glen Lyn 006

Effluent Flow = 2.8 MGD
Stream 7Q10 = 0.42 MGD
Stream 30Q10 = 0.54 MGD
Stream 1Q10 = 0.34 MGD
Stream slope = 0.01 ft/ft
Stream width = 8 ft
Bottom scale = 2
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = .5455 ft
Length = 127.86 ft
Velocity = 1.142 ft/sec
Residence Time = .0013 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = .5582 ft
Length = 125.22 ft
Velocity = 1.1575 ft/sec
Residence Time = .0013 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = .537 ft
Length = 129.7 ft
Velocity = 1.1314 ft/sec
Residence Time = .0318 hours

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 1Q10 may be used.

Mixing Zone Predictions for

APCO Glen Lyn 007

Effluent Flow = 0.103 MGD
Stream 7Q10 = 449.75 MGD
Stream 30Q10 = 573.17 MGD
Stream 1Q10 = 360.77 MGD
Stream slope = 0.001 ft/ft
Stream width = 560 ft
Bottom scale = 3
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = 1.9006 ft
Length = 174556.81 ft
Velocity = .6543 ft/sec
Residence Time = 3.0879 days

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 64.77% of the 7Q10 is used.

Mixing Zone Predictions @ 30Q10

Depth = 2.1991 ft
Length = 154465.24 ft
Velocity = .7206 ft/sec
Residence Time = 2.481 days

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 80.61% of the 30Q10 is used.

Mixing Zone Predictions @ 1Q10

Depth = 1.6646 ft
Length = 195055.48 ft
Velocity = .5993 ft/sec
Residence Time = 90.414 hours

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 1.11% of the 1Q10 is used.

Mixing Zone Predictions for

APCO Glen Lyn 007 Wet

Effluent Flow = 0.103 MGD
Stream 7Q10 = 834.35 MGD
Stream 30Q10 = 1202.13 MGD
Stream 1Q10 = 560.71 MGD
Stream slope = 0.001 ft/ft
Stream width = 560 ft
Bottom scale = 3
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = 2.7569 ft
Length = 127777.02 ft
Velocity = .8367 ft/sec
Residence Time = 1.7676 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = 3.4354 ft
Length = 106198.56 ft
Velocity = .9674 ft/sec
Residence Time = 1.2706 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = 2.1702 ft
Length = 156187.64 ft
Velocity = .7143 ft/sec
Residence Time = 60.7366 hours

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 1.65% of the 1Q10 is used.

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: APCO Glen Lyn - Outfall 001

Permit No.: VA0000370

Receiving Stream: New River

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) = 68.2 mg/L
 90% Temperature (Annual) = 25.4 deg C
 90% Temperature (Wet season) = deg C
 90% Maximum pH = 8.62 SU
 10% Maximum pH = 7.29 SU
 Tier Designation (1 or 2) = 2
 Public Water Supply (PWS) Y/N? = n
 Trout Present Y/N? = n
 Early Life Stages Present Y/N? = y

Stream Flows

1Q10 (Annual) = 565 MGD
 7Q10 (Annual) = 653 MGD
 30Q10 (Annual) = 775 MGD
 1Q10 (Wet season) = 762 MGD
 30Q10 (Wet season) = 1396 MGD
 30Q5 = 866 MGD
 Harmonic Mean = 1939 MGD
 Annual Average = 3178 MGD

Mixing Information

Annual - 1Q10 Mix = 1.66 %
 - 7Q10 Mix = 90.76 %
 - 30Q10 Mix = 100 %
 Wet Season - 1Q10 Mix = 2.17 %
 - 30Q10 Mix = 100 %

Effluent Information

Mean Hardness (as CaCO3) = 68.2 mg/L
 90% Temp (Annual) = 25.4 deg C
 90% Temp (Wet season) = deg C
 90% Maximum pH = 8.62 SU
 10% Maximum pH = 7.29 SU
 Discharge Flow = 0.676 MGD

Parameter (ug/l unless noted)	Background Conc.		Water Quality Criteria		Wasteload Allocations		Antidegradation Baseline		Antidegradation Allocations		Most Limiting Allocations	
	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenaphthene	0	0	na	2.7E+03	na	3.5E+06	na	2.7E+02	na	3.5E+05	na	3.5E+05
Acrolein	0	0	na	7.8E+02	na	1.0E+06	na	7.8E+01	na	1.0E+05	na	1.0E+05
Acrylonitrile ^f	0	0	na	6.6E+00	na	1.9E+04	na	6.6E-01	na	1.9E+03	na	1.9E+03
Aldrin ^c	0	0	na	1.4E-03	na	4.0E+00	na	1.4E-04	na	4.0E-01	na	4.0E-01
Ammonia-N (mg/l) (Yearly)	0	0	na	4.41E-01	na	5.1E+02	na	1.10E-01	na	1.3E+02	na	1.3E+02
Ammonia-N (mg/l) (High Flow)	0	0	na	8.89E-01	na	1.8E+03	na	2.22E-01	na	4.6E+02	na	4.6E+02
Anthracene	0	0	na	1.1E+05	na	1.4E+08	na	1.1E+04	na	1.4E+07	na	1.4E+07
Antimony	0	0	na	4.3E+03	na	5.5E+06	na	4.3E+02	na	5.5E+05	na	5.5E+05
Arsenic	0	0	na	1.5E+02	na	1.3E+05	na	3.8E+01	na	3.6E+04	na	3.6E+04
Barium	0	0	na	7.1E+02	na	2.0E+06	na	7.1E+01	na	2.0E+05	na	2.0E+05
Benzene ^c	0	0	na	5.4E-03	na	1.5E+01	na	5.4E-04	na	1.5E+00	na	1.5E+00
Benzidine ^e	0	0	na	4.9E-01	na	1.4E+03	na	4.9E-02	na	1.4E+02	na	1.4E+02
Benzo (a) anthracene ^c	0	0	na	4.9E-01	na	1.4E+03	na	4.9E-02	na	1.4E+02	na	1.4E+02
Benzo (b) fluoranthene ^c	0	0	na	4.9E-01	na	1.4E+03	na	4.9E-02	na	1.4E+02	na	1.4E+02
Benzo (k) fluoranthene ^c	0	0	na	4.9E-01	na	1.4E+03	na	4.9E-02	na	1.4E+02	na	1.4E+02
Benzo (e) pyrene ^c	0	0	na	4.9E-01	na	1.4E+03	na	4.9E-02	na	1.4E+02	na	1.4E+02
Bis-2-Chloroethyl Ether.	0	0	na	1.4E+01	na	1.8E+04	na	1.4E+00	na	1.8E+03	na	1.8E+03
Bis-2-Chloroisopropyl Ether	0	0	na	1.7E+05	na	2.2E+08	na	1.7E+04	na	2.2E+07	na	2.2E+07
Bromoform ^c	0	0	na	3.6E+03	na	1.0E+07	na	3.6E+02	na	1.0E+06	na	1.0E+06
Butylbenzylphthalate	0	0	na	5.2E+03	na	6.7E+06	na	5.2E+02	na	6.7E+05	na	6.7E+05
Cadmium	0	0	na	8.4E-01	na	7.4E+02	na	2.1E-01	na	2.0E+02	na	2.0E+02
Carbon Tetrachloride ^c	0	0	na	4.4E+01	na	1.3E+05	na	4.4E+00	na	1.3E+04	na	1.3E+04
Chlordane ^c	0	0	na	2.2E-02	na	6.3E+01	na	2.2E-03	na	6.3E+00	na	6.3E+00
Chloride	0	0	na	2.3E+05	na	1.3E+07	na	2.2E+05	na	5.6E+07	na	5.6E+07
Chloride	0	0	na	1.1E+01	na	2.8E+02	na	4.8E+00	na	2.7E+03	na	2.7E+03
TRC	0	0	na	2.1E+04	na	2.7E+07	na	2.1E+03	na	2.7E+06	na	2.7E+06
Chlorobenzene	0	0	na	2.1E+04	na	2.7E+07	na	2.1E+03	na	2.7E+06	na	2.7E+06

Parameter (ug/l unless noted) c	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)
Pentachlorophenol ^c	0	1.2E+01	9.0E+00	na	1.7E+02	7.9E+03	na	2.4E+00	2.2E+00	8.2E+00	2.4E+03	2.2E+03	1.7E+02	2.2E+03	na	2.4E+04
Phenol	0	-	-	na	-	-	na	-	-	4.6E+05	-	-	-	-	na	5.9E+08
Pyrene	0	-	-	na	-	-	na	-	-	1.4E+07	-	-	-	-	na	1.4E+06
Radionuclides (pCi/l except Beta/Photon)	0	-	-	na	-	-	na	-	-	-	-	-	-	-	na	-
Gross Alpha Activity Beta and Pholon Activity (mrem/yr)	0	-	-	na	-	-	na	-	-	1.9E+04	-	-	-	-	na	1.9E+03
Strontium-90	0	-	-	na	-	-	na	-	-	4.0E+00	-	-	-	-	na	5.1E+02
Tritium	0	-	-	na	-	-	na	-	-	8.0E+01	-	-	-	-	na	1.0E+03
Selenium	0	2.0E+01	5.0E+00	na	3.0E+02	4.4E+03	na	5.0E+00	1.3E+00	2.0E+03	4.2E+03	1.2E+03	3.0E+02	1.2E+03	na	2.6E+06
Silver	0	1.8E+00	-	na	2.7E+01	-	na	4.5E-01	-	-	3.7E+02	-	2.7E+01	-	na	1.4E+06
Sulfate	0	-	-	na	-	-	na	-	-	-	-	-	-	-	na	-
1,1,2,2-Tetrachloroethane ^g	0	-	-	na	-	-	na	-	-	1.1E+02	-	-	-	-	na	3.2E+04
Tetrachloroethylene ^g	0	-	-	na	-	-	na	-	-	8.9E+01	-	-	-	-	na	2.6E+04
Thallium	0	-	-	na	-	-	na	-	-	6.3E+00	-	-	-	-	na	8.1E+02
Toluene	0	-	-	na	-	-	na	-	-	2.0E+05	-	-	-	-	na	2.6E+07
Total dissolved solids	0	-	-	na	-	-	na	-	-	-	-	-	-	-	na	-
Toxaphene ^c	0	7.3E-01	2.0E-04	na	1.1E+01	1.8E-01	na	1.8E-01	5.0E-05	7.5E-04	1.5E+02	4.8E-02	1.1E+01	4.8E-02	na	2.2E+00
Tributyltin	0	4.6E-01	6.3E-02	na	6.8E+00	5.5E+01	na	1.2E-01	1.8E-02	-	9.6E+01	1.5E+01	6.8E+00	1.5E+01	na	2.2E+00
1,2,4-Trichlorobenzene	0	-	-	na	-	-	na	-	-	9.4E+01	-	-	-	-	na	1.2E+05
1,1,2-Trichloroethane ^g	0	-	-	na	-	-	na	-	-	4.2E+01	-	-	-	-	na	1.2E+05
Trichloroethylene ^c	0	-	-	na	-	-	na	-	-	8.1E+02	-	-	-	-	na	2.3E+05
2,4,6-Trichlorophenol ^c	0	-	-	na	-	-	na	-	-	6.5E+01	-	-	-	-	na	1.9E+04
2-(2,4,5-Trichlorophenoxy)propionic acid (Silvex)	0	-	-	na	-	-	na	-	-	-	-	-	-	-	na	-
Vinyl Chloride ^g	0	8.5E+01	8.5E+01	na	1.3E+03	7.5E+04	na	2.1E+01	2.1E+01	6.1E+00	1.8E+04	2.1E+04	1.3E+03	2.1E+04	na	8.8E+06
Zinc	0	-	-	na	-	-	na	-	-	6.9E+03	-	-	-	-	na	5.0E+02

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Metal	Target Value (SSTV)
Antimony	5.5E+05
Arsenic	2.0E+03
Barium	na
Cadmium	1.5E+01
Chromium III	2.5E+03
Chromium VI	9.5E+01
Copper	5.6E+01
Iron	na
Lead	4.3E+02
Manganese	na
Mercury	6.5E+00
Nickel	7.8E+02
Selenium	1.2E+02
Silver	1.1E+01
Zinc	5.0E+02

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic = (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: APCO Glen Lyn - Outfall 002

Permit No.: VA0000370

Receiving Stream: New River

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) = 68.2 mg/L
 90% Temperature (Annual) = 25.4 deg C
 90% Temperature (Wet season) = 25.4 deg C
 90% Maximum pH = 8.62 SU
 10% Maximum pH = 7.29 SU
 Tier Designation (1 or 2) = 2
 Public Water Supply (PWS) Y/N? = n
 Trout Present Y/N? = n
 Early Life Stages Present Y/N? = y

Stream Flows

1Q10 (Annual) = 212.9 MGD
 7Q10 (Annual) = 300.9 MGD
 30Q10 (Annual) = 422.9 MGD
 1Q10 (Wet season) = 409.9 MGD
 30Q10 (Wet season) = 1043.9 MGD
 30Q5 = 513.9 MGD
 Harmonic Mean = 1586.9 MGD
 Annual Average = 2825.9 MGD

Mixing Information

Annual - 1Q10 Mix = 0.78 %
 - 7Q10 Mix = 49.34 %
 - 30Q10 Mix = 65.4 %
 Wet Season - 1Q10 Mix = 1.33 %
 - 30Q10 Mix = 100 %

Effluent Information

Mean Hardness (as CaCO3) = 68.2 mg/L
 90% Temp (Annual) = 25.4 deg C
 90% Temp (Wet season) = 25.4 deg C
 90% Maximum pH = 8.62 SU
 10% Maximum pH = 7.29 SU
 Discharge Flow = 31.8 MGD

Parameter (ug/l unless noted)	Background Conc.		Water Quality Criteria				Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations					
	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	
Acenaphthene	0	--	--	2.7E+03	--	--	na	4.6E+04	--	--	na	2.7E+02	--	--	na	4.6E+03	--	--	na	4.6E+03	4.6E+03
Acrolein	0	--	--	7.8E+02	--	--	na	1.3E+04	--	--	na	7.8E+01	--	--	na	1.3E+03	--	--	na	1.3E+03	1.3E+03
Acrylonitrile ^f	0	--	--	6.6E+00	--	--	na	3.4E+02	--	--	na	6.6E-01	--	--	na	3.4E+01	--	--	na	3.4E+01	3.4E+01
Aldrin ^c	0	3.0E+00	--	1.4E-03	3.2E+00	--	na	7.1E-02	7.5E-01	--	na	1.4E-04	7.5E-01	--	na	7.1E-03	3.2E+00	3.2E+00	na	7.1E-03	7.1E-03
Ammonia-N (mg/l) (Yearly)	0	2.55E+00	4.41E-01	--	2.7E+00	4.3E+00	na	--	6.38E-01	1.10E-01	na	--	6.38E-01	1.10E-01	na	1.6E+00	4.9E+00	2.7E+00	1.6E+00	na	2.7E+00
Ammonia-N (mg/l) (High Flow)	0	2.55E+00	8.89E-01	--	3.0E+00	3.0E+01	na	--	6.38E-01	2.22E-01	na	--	6.38E-01	2.22E-01	na	7.5E+00	8.9E+00	3.0E+00	7.5E+00	na	3.0E+00
Anthracene	0	--	--	1.1E+05	--	--	na	1.9E+06	--	--	na	1.1E+04	--	--	na	1.9E+05	--	--	na	1.9E+05	1.9E+05
Antimony	0	--	--	4.3E+03	--	--	na	7.4E+04	--	--	na	4.3E+02	--	--	na	7.4E+03	--	--	na	7.4E+03	7.4E+03
Arsenic	0	3.4E+02	1.5E+02	--	3.6E+02	8.5E+02	na	--	8.6E+01	3.8E+01	na	--	8.6E+01	3.8E+01	na	3.9E+02	6.5E+02	3.6E+02	3.9E+02	na	3.6E+02
Barium	0	--	--	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	--	na	--
Benzene ^c	0	--	--	7.1E+02	--	--	na	3.6E+04	--	--	na	7.1E+01	--	--	na	3.6E+03	--	--	na	3.6E+03	3.6E+03
Benzidine ^c	0	--	--	5.4E-03	--	--	na	2.7E-01	--	--	na	5.4E-04	--	--	na	2.7E-02	--	--	na	2.7E-02	2.7E-02
Benzo (a) anthracene ^c	0	--	--	4.9E-01	--	--	na	2.5E+01	--	--	na	4.9E-02	--	--	na	2.5E+00	--	--	na	2.5E+00	2.5E+00
Benzo (b) fluoranthene ^c	0	--	--	4.9E-01	--	--	na	2.5E+01	--	--	na	4.9E-02	--	--	na	2.5E+00	--	--	na	2.5E+00	2.5E+00
Benzo (k) fluoranthene ^c	0	--	--	4.9E-01	--	--	na	2.5E+01	--	--	na	4.9E-02	--	--	na	2.5E+00	--	--	na	2.5E+00	2.5E+00
Benzo (a) pyrene ^c	0	--	--	4.9E-01	--	--	na	2.5E+01	--	--	na	4.9E-02	--	--	na	2.5E+00	--	--	na	2.5E+00	2.5E+00
Bis(2-Chloroethyl) Ether	0	--	--	1.4E+01	--	--	na	2.4E+02	--	--	na	1.4E+00	--	--	na	2.4E+01	--	--	na	2.4E+01	2.4E+01
Bis(2-Chloroisopropyl) Ether	0	--	--	1.7E+05	--	--	na	2.9E+06	--	--	na	1.7E+04	--	--	na	2.9E+05	--	--	na	2.9E+05	2.9E+05
Bromoform ^c	0	--	--	3.6E+03	--	--	na	1.8E+05	--	--	na	3.6E+02	--	--	na	1.8E+04	--	--	na	1.8E+04	1.8E+04
Butylbenzylphthalate	0	--	--	5.2E+03	--	--	na	8.9E+04	--	--	na	5.2E+02	--	--	na	8.9E+03	--	--	na	8.9E+03	8.9E+03
Cadmium	0	2.5E+00	8.4E-01	--	2.7E+00	4.8E+00	na	--	6.4E-01	2.1E-01	na	--	6.4E-01	2.1E-01	na	2.2E+00	4.9E+00	2.7E+00	2.2E+00	na	2.7E+00
Carbon Tetrachloride ^c	0	--	--	4.4E+01	--	--	na	2.2E+03	--	--	na	4.4E+00	--	--	na	2.2E+02	--	--	na	2.2E+02	2.2E+02
Chlordane ^c	0	2.4E+00	4.3E-03	--	2.5E+00	2.4E-02	na	1.1E+00	6.0E-01	1.1E-03	na	2.2E-03	6.0E-01	1.1E-03	na	1.1E-02	4.6E+00	2.5E+00	1.1E-02	na	2.5E+00
Chloride	0	8.6E+05	2.3E+05	--	9.0E+05	1.3E+06	na	--	2.2E+05	5.8E+04	na	--	2.2E+05	5.8E+04	na	6.0E+05	9.0E+05	9.0E+05	6.0E+05	na	9.0E+05
TRC	0	1.9E+01	1.1E+01	--	2.0E+01	6.2E+01	na	--	4.8E+00	2.8E+00	na	--	4.8E+00	2.8E+00	na	2.9E+01	3.7E+01	2.0E+01	2.9E+01	na	2.0E+01
Chlorobenzene	0	--	--	2.1E+04	--	--	na	3.6E+05	--	--	na	2.1E+03	--	--	na	3.6E+04	--	--	na	3.6E+04	3.6E+04

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations							
		Acute		Chronic		HH (PWS)		HH		Acute		Chronic		HH (PWS)		HH		Acute		Chronic		HH (PWS)		HH	
Chlorobromomethanê	0					3.4E+02	na	1.7E+04	na	3.4E+01	na	na	3.4E+01	na	1.7E+03	na	1.7E+03	na	na	na	na	na	na	1.7E+03	
Chloroform ^c	0					2.9E+04	na	1.5E+06	na	2.9E+03	na	na	2.9E+03	na	1.5E+05	na	1.5E+05	na	na	na	na	na	na	1.5E+05	
2-Chloronaphthalene	0					4.3E+03	na	7.4E+04	na	4.3E+02	na	na	4.3E+02	na	7.4E+03	na	7.4E+03	na	na	na	na	na	na	7.4E+03	
2-Chlorophenol	0					4.0E+02	na	6.9E+03	na	4.0E+01	na	na	4.0E+01	na	6.9E+02	na	6.9E+02	na	na	na	na	na	na	6.9E+02	
Chlorpyrifos	0					8.7E-02	na	2.3E-01	na	8.7E-02	na	na	8.7E-02	na	2.3E-01	na	2.3E-01	na	na	na	na	na	na	2.3E-01	
Chromium III	0					4.2E+02	na	3.1E+02	na	4.2E+02	na	na	4.2E+02	na	3.1E+02	na	3.1E+02	na	na	na	na	na	na	3.1E+02	
Chromium VI	0					1.7E+01	na	6.2E+01	na	1.7E+01	na	na	1.7E+01	na	6.2E+01	na	6.2E+01	na	na	na	na	na	na	6.2E+01	
Chromium, Total	0					4.9E-01	na	2.5E+01	na	4.9E-01	na	na	4.9E-01	na	2.5E+01	na	2.5E+01	na	na	na	na	na	na	2.5E+01	
Chrysene ^c	0					9.9E+00	na	3.7E+01	na	9.9E+00	na	na	9.9E+00	na	3.7E+01	na	3.7E+01	na	na	na	na	na	na	3.7E+01	
Copper	0					2.2E+01	na	5.2E+00	na	2.2E+01	na	na	2.2E+01	na	5.2E+00	na	5.2E+00	na	na	na	na	na	na	5.2E+00	
Cyanide	0					8.4E-03	na	3.0E-01	na	8.4E-03	na	na	8.4E-03	na	3.0E-01	na	3.0E-01	na	na	na	na	na	na	3.0E-01	
DDD ^c	0					5.9E-03	na	3.0E-01	na	5.9E-03	na	na	5.9E-03	na	3.0E-01	na	3.0E-01	na	na	na	na	na	na	3.0E-01	
DDC ^c	0					5.9E-03	na	3.0E-01	na	5.9E-03	na	na	5.9E-03	na	3.0E-01	na	3.0E-01	na	na	na	na	na	na	3.0E-01	
DDT ^c	0					1.0E-01	na	5.7E-03	na	1.0E-01	na	na	1.0E-01	na	5.7E-03	na	5.7E-03	na	na	na	na	na	na	5.7E-03	
Demeton	0					4.9E-01	na	2.5E+01	na	4.9E-01	na	na	4.9E-01	na	2.5E+01	na	2.5E+01	na	na	na	na	na	na	2.5E+01	
Dibenz(a,h)anthracene ^c	0					1.2E+04	na	2.1E+05	na	1.2E+04	na	na	1.2E+04	na	2.1E+05	na	2.1E+05	na	na	na	na	na	na	2.1E+05	
Dibutyl phthalate	0					1.6E+04	na	8.1E+05	na	1.6E+04	na	na	1.6E+04	na	8.1E+05	na	8.1E+05	na	na	na	na	na	na	8.1E+05	
Dichloromethane	0					1.7E+04	na	2.9E+05	na	1.7E+04	na	na	1.7E+04	na	2.9E+05	na	2.9E+05	na	na	na	na	na	na	2.9E+05	
(Methylene Chloride) ^c	0					2.6E+03	na	4.5E+04	na	2.6E+03	na	na	2.6E+03	na	4.5E+04	na	4.5E+04	na	na	na	na	na	na	4.5E+04	
1,2-Dichlorobenzene	0					2.6E+03	na	4.5E+04	na	2.6E+03	na	na	2.6E+03	na	4.5E+04	na	4.5E+04	na	na	na	na	na	na	4.5E+04	
1,3-Dichlorobenzene	0					7.7E-01	na	3.9E+01	na	7.7E-01	na	na	7.7E-01	na	3.9E+01	na	3.9E+01	na	na	na	na	na	na	3.9E+01	
1,4-Dichlorobenzene	0					4.6E+02	na	2.3E+04	na	4.6E+02	na	na	4.6E+02	na	2.3E+04	na	2.3E+04	na	na	na	na	na	na	2.3E+04	
3,3-Dichlorobenzidind ^c	0					9.9E+02	na	5.0E+04	na	9.9E+02	na	na	9.9E+02	na	5.0E+04	na	5.0E+04	na	na	na	na	na	na	5.0E+04	
Dichlorobromomethane ^c	0					1.7E+04	na	2.9E+05	na	1.7E+04	na	na	1.7E+04	na	2.9E+05	na	2.9E+05	na	na	na	na	na	na	2.9E+05	
1,2-Dichloroethane ^c	0					1.4E+05	na	2.4E+06	na	1.4E+05	na	na	1.4E+05	na	2.4E+06	na	2.4E+06	na	na	na	na	na	na	2.4E+06	
1,1-Dichloroethylene	0					7.9E+02	na	1.4E+04	na	7.9E+02	na	na	7.9E+02	na	1.4E+04	na	1.4E+04	na	na	na	na	na	na	1.4E+04	
1,2-trans-dichloroethylene	0					3.9E+02	na	2.0E+04	na	3.9E+02	na	na	3.9E+02	na	2.0E+04	na	2.0E+04	na	na	na	na	na	na	2.0E+04	
2,4-Dichlorophenol	0					1.7E+03	na	2.9E+04	na	1.7E+03	na	na	1.7E+03	na	2.9E+04	na	2.9E+04	na	na	na	na	na	na	2.9E+04	
2,4-Dichlorophenoxy acetic acid (2,4-D)	0					5.6E-02	na	3.2E-01	na	5.6E-02	na	na	5.6E-02	na	3.2E-01	na	3.2E-01	na	na	na	na	na	na	3.2E-01	
1,2-Dichloropropanê	0					2.4E-01	na	1.4E-03	na	2.4E-01	na	na	2.4E-01	na	1.4E-03	na	1.4E-03	na	na	na	na	na	na	1.4E-03	
1,3-Dichloropropene	0					1.2E+05	na	2.1E+06	na	1.2E+05	na	na	1.2E+05	na	2.1E+06	na	2.1E+06	na	na	na	na	na	na	2.1E+06	
Dieldrin ^c	0					5.9E+01	na	3.0E+03	na	5.9E+01	na	na	5.9E+01	na	3.0E+03	na	3.0E+03	na	na	na	na	na	na	3.0E+03	
Diethyl Phthalate	0					2.9E+03	na	4.1E+04	na	2.9E+03	na	na	2.9E+03	na	4.1E+04	na	4.1E+04	na	na	na	na	na	na	4.1E+04	
Di-2-Ethylhexyl Phthalate ^c	0					2.9E+03	na	4.1E+04	na	2.9E+03	na	na	2.9E+03	na	4.1E+04	na	4.1E+04	na	na	na	na	na	na	4.1E+04	
2,4-Dimethylphenol	0					2.9E+03	na	4.1E+04	na	2.9E+03	na	na	2.9E+03	na	4.1E+04	na	4.1E+04	na	na	na	na	na	na	4.1E+04	
Dimethyl Phthalate	0					2.9E+06	na	5.0E+07	na	2.9E+06	na	na	2.9E+06	na	5.0E+07	na	5.0E+07	na	na	na	na	na	na	5.0E+07	
Di-n-Butyl Phthalate	0					1.2E+04	na	2.1E+05	na	1.2E+04	na	na	1.2E+04	na	2.1E+05	na	2.1E+05	na	na	na	na	na	na	2.1E+05	
2,4 Dinitrophenol	0					1.4E+04	na	2.4E+05	na	1.4E+04	na	na	1.4E+04	na	2.4E+05	na	2.4E+05	na	na	na	na	na	na	2.4E+05	
2-Methyl-4,6-Dinitrophenol	0					7.65E+02	na	1.3E+04	na	7.65E+02	na	na	7.65E+02	na	1.3E+04	na	1.3E+04	na	na	na	na	na	na	1.3E+04	
2,4-Dinitrotoluene ^c	0					9.1E+01	na	4.6E+03	na	9.1E+01	na	na	9.1E+01	na	4.6E+03	na	4.6E+03	na	na	na	na	na	na	4.6E+03	
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppq)	0					1.2E-06	na	na	na	1.2E-06	na	na	1.2E-06	na	na	na	na	na	na	na	na	na	na	na	
1,2-Diphenylhydrazinê	0					5.4E+00	na	2.7E+02	na	5.4E+00	na	na	5.4E+00	na	2.7E+02	na	2.7E+02	na	na	na	na	na	na	2.7E+02	
Alpha-Endosulfan	0					2.3E-01	na	3.2E-01	na	2.3E-01	na	na	2.3E-01	na	3.2E-01	na	3.2E-01	na	na	na	na	na	na	3.2E-01	
Beta-Endosulfan	0					2.3E-01	na	3.2E-01	na	2.3E-01	na	na	2.3E-01	na	3.2E-01	na	3.2E-01	na	na	na	na	na	na	3.2E-01	
Endosulfan Sulfate	0					8.6E-02	na	3.6E-02	na	8.6E-02	na	na	8.6E-02	na	3.6E-02	na	3.6E-02	na	na	na	na	na	na	3.6E-02	
Endrin	0					9.0E-02	na	2.0E-01	na	9.0E-02	na	na	9.0E-02	na	2.0E-01	na	2.0E-01	na	na	na	na	na	na	2.0E-01	
Endrin Aldehyde	0					8.1E-01	na	1.4E+01	na	8.1E-01	na	na	8.1E-01	na	1.4E+01	na	1.4E+01	na	na	na	na	na	na	1.4E+01	

Parameter (ug/l unless noted) c	Background			Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations					
	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH				
Pentachlorophenol ^c	0	1.2E+01	9.0E+00	na	8.2E+01	1.2E+01	5.1E+01	na	4.2E+03	2.9E+00	2.2E+00	na	8.2E+00	2.2E+01	2.3E+01	na	4.2E+02	1.2E+01	2.3E+01	na	4.2E+02
Phenol	0	--	--	na	4.6E+06	--	--	na	7.9E+07	--	--	na	4.6E+05	--	--	na	7.9E+06	--	--	na	7.9E+06
Pyrene	0	--	--	na	1.1E+04	--	--	na	1.9E+05	--	--	na	1.1E+03	--	--	na	1.9E+04	--	--	na	1.9E+04
Radionuclides (pCi/l except Beta/Photon)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Gross Alpha Activity	0	--	--	na	1.5E+01	--	--	na	2.6E+02	--	--	na	1.5E+00	--	--	na	2.6E+01	--	--	na	2.6E+01
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	6.9E+01	--	--	na	4.0E+01	--	--	na	6.9E+00	--	--	na	6.9E+00
Strontium-90	0	--	--	na	8.0E+00	--	--	na	1.4E+02	--	--	na	8.0E+01	--	--	na	1.4E+01	--	--	na	1.4E+01
Tritium	0	--	--	na	2.0E+04	--	--	na	3.4E+05	--	--	na	2.0E+03	--	--	na	3.4E+04	--	--	na	3.4E+04
Selenium	0	2.0E+01	5.0E+00	na	1.1E+04	2.1E+01	2.8E+01	na	1.9E+05	5.0E+00	1.3E+00	na	1.1E+03	3.8E+01	1.3E+01	na	1.9E+04	2.1E+01	1.3E+01	na	1.9E+04
Silver	0	1.8E+00	--	na	--	1.9E+00	--	na	--	4.5E-01	--	na	--	3.4E+00	--	na	--	1.9E+00	--	na	--
Sulfate	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
1,1,2,2-Tetrachloroethane ^f	0	--	--	na	1.1E+02	--	--	na	5.6E+03	--	--	na	1.1E+01	--	--	na	5.6E+02	--	--	na	5.6E+02
Tetrachloroethylen ^f	0	--	--	na	8.9E+01	--	--	na	4.5E+03	--	--	na	8.9E+00	--	--	na	4.5E+02	--	--	na	4.5E+02
Thallium	0	--	--	na	6.3E+00	--	--	na	1.1E+02	--	--	na	6.3E-01	--	--	na	1.1E+01	--	--	na	1.1E+01
Toluene	0	--	--	na	2.0E+05	--	--	na	3.4E+06	--	--	na	2.0E+04	--	--	na	3.4E+05	--	--	na	3.4E+05
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Toxaphene ^c	0	7.3E-01	2.0E-04	na	7.5E-03	7.7E-01	1.1E-03	na	3.8E-01	1.8E-01	5.0E-05	na	7.5E-04	1.4E+00	5.2E-04	na	3.8E-02	7.7E-01	5.2E-04	na	3.8E-02
Tributyltin	0	4.6E-01	6.3E-02	na	--	4.8E-01	3.6E-01	na	--	1.2E-01	1.6E-02	na	--	8.8E-01	1.6E-01	na	--	4.8E-01	1.6E-01	na	--
1,2,4-Trichlorobenzene	0	--	--	na	9.4E+02	--	--	na	1.6E+04	--	--	na	9.4E+01	--	--	na	1.6E+03	--	--	na	1.6E+03
1,1,2-Trichloroethane ^f	0	--	--	na	4.2E+02	--	--	na	2.1E+04	--	--	na	4.2E+01	--	--	na	2.1E+03	--	--	na	2.1E+03
Trichloroethylene ^c	0	--	--	na	8.1E+02	--	--	na	4.1E+04	--	--	na	8.1E+01	--	--	na	4.1E+03	--	--	na	4.1E+03
2,4,6-Trichlorophenol ^c	0	--	--	na	6.5E+01	--	--	na	3.3E+03	--	--	na	6.5E+00	--	--	na	3.3E+02	--	--	na	3.3E+02
2-(2,4,5-Trichlorophenoxy)propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Vinyl Chloride ^f	0	--	--	na	6.1E+01	--	--	na	3.1E+03	--	--	na	6.1E+00	--	--	na	3.1E+02	--	--	na	3.1E+02
Zinc	0	8.5E+01	8.5E+01	na	6.9E+04	8.9E+01	4.8E+02	na	1.2E+06	2.1E+01	2.1E+01	na	6.9E+03	1.6E+02	2.2E+02	na	1.2E+05	8.9E+01	2.2E+02	na	1.2E+05

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Metal	Target Value (SSTV)
Antimony	7.4E+03
Arsenic	1.4E+02
Barium	na
Cadmium	1.1E+00
Chromium III	8.5E+01
Chromium VI	6.7E+00
Copper	3.9E+00
Iron	na
Lead	1.3E+01
Manganese	na
Mercury	8.8E-02
Nickel	2.3E+01
Selenium	7.8E+00
Silver	7.5E-01
Zinc	3.6E+01

Notes:
1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: APCO Glen Lyn - Outfall 003

Receiving Stream: New River

Permit No.: VA0000370

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) = 68.2 mg/L
 90% Temperature (Annual) = 25.4 deg C
 90% Temperature (Wet season) = deg C
 90% Maximum pH = 8.62 SU
 10% Maximum pH = 7.29 SU
 Tier Designation (1 or 2) = 2
 Public Water Supply (PWS) Y/N? = n
 Trout Present Y/N? = n
 Early Life Stages Present Y/N? = y

Stream Flows

1Q10 (Annual) = 241.1 MGD
 7Q10 (Annual) = 329.1 MGD
 3Q10 (Annual) = 451.1 MGD
 1Q10 (Wet season) = 412.1 MGD
 3Q10 (Wet season) = 1072.1 MGD
 3Q05 = 542.1 MGD
 Harmonic Mean = 1615.1 MGD
 Annual Average = 2854.1 MGD

Mixing Information

Annual - 1Q10 Mix = 1.12 %
 - 7Q10 Mix = 65.19 %
 - 3Q10 Mix = 80.85 %
 Wet Season - 1Q10 Mix = 1.58 %
 - 3Q10 Mix = 100 %

Effluent Information

Mean Hardness (as CaCO3) = 68.2 mg/L
 90% Temp (Annual) = 25.4 deg C
 90% Temp (Wet season) = deg C
 90% Maximum pH = 8.62 SU
 10% Maximum pH = 7.29 SU
 Discharge Flow = 124 MGD

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			WasteLoad Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)
Acenaphthene	0	--	--	na	--	--	na	--	--	na	2.7E+02	1.5E+04	--	--	na	1.5E+03
Acrolein	0	--	--	na	--	--	na	--	--	na	7.8E+01	4.2E+02	--	--	na	4.2E+02
Acrylonitrile ^f	0	--	--	na	--	--	na	--	--	na	6.6E+01	9.3E+01	--	--	na	9.3E+00
Aldrin ^c	0	3.0E+00	--	na	3.1E+00	--	na	7.5E-01	--	na	1.4E-04	2.0E-02	2.2E+00	--	na	2.0E-03
Ammonia-N (mg/l)	0	2.55E+00	4.41E-01	na	2.6E+00	1.7E+00	na	6.38E-01	1.10E-01	na	--	--	1.9E+00	5.1E-01	na	--
Ammonia-N (mg/l) (High Flow)	0	2.55E+00	8.99E-01	na	2.7E+00	8.6E+00	na	6.38E-01	2.22E-01	na	--	--	2.8E+00	2.1E+00	na	--
Anthracene	0	--	--	na	--	--	na	--	--	na	1.1E+04	5.9E+05	--	--	na	5.9E+04
Atrinyon	0	--	--	na	--	--	na	--	--	na	4.3E+03	2.3E+04	--	--	na	2.3E+03
Arsenic	0	3.4E+02	1.5E+02	na	3.5E+02	4.1E+02	na	8.5E+01	3.8E+01	na	--	--	2.5E+02	1.4E+02	na	--
Barium	0	--	--	na	--	--	na	--	--	na	--	--	--	--	na	--
Benzene ^c	0	--	--	na	--	--	na	--	--	na	7.1E+02	1.0E+04	--	--	na	1.0E+03
Benzidine ^f	0	--	--	na	--	--	na	--	--	na	5.4E-03	7.6E-02	--	--	na	7.6E-03
Benzo (a) anthracene ^c	0	--	--	na	--	--	na	--	--	na	4.9E-01	6.9E+00	--	--	na	6.9E-01
Benzo (b) fluoranthene ^c	0	--	--	na	--	--	na	--	--	na	4.9E-01	6.9E+00	--	--	na	6.9E-01
Benzo (k) fluoranthene ^c	0	--	--	na	--	--	na	--	--	na	4.9E-01	6.9E+00	--	--	na	6.9E-01
Benzo (a) pyrene ^c	0	--	--	na	--	--	na	--	--	na	4.9E-02	6.9E+00	--	--	na	6.9E-01
Bis(2-Chloroethyl) Ether	0	--	--	na	--	--	na	--	--	na	1.4E+00	7.5E+01	--	--	na	7.5E+00
Bis(2-Chloroisopropyl) Ether	0	--	--	na	--	--	na	--	--	na	1.7E+05	9.1E+05	--	--	na	9.1E+04
Bromoform ^c	0	--	--	na	--	--	na	--	--	na	3.6E+03	5.0E+04	--	--	na	5.0E+03
Butylbenzylphthalate	0	--	--	na	--	--	na	--	--	na	5.2E+03	2.8E+04	--	--	na	2.8E+03
Cadmium	0	2.5E+00	8.4E-01	na	2.6E+00	2.3E+00	na	6.4E-01	2.1E-01	na	--	--	1.9E+00	7.7E-01	na	--
Carbon Tetrachloride ^c	0	--	--	na	--	--	na	--	--	na	4.4E+01	6.2E+02	--	--	na	6.2E+01
Chlordane ^c	0	2.4E+00	4.3E-03	na	2.5E+00	1.2E-02	na	6.0E-01	1.1E-03	na	2.2E-03	3.1E-01	1.8E+00	3.9E-03	na	3.1E-02
Chloride	0	8.6E+05	2.3E+05	na	8.8E+05	6.3E+05	na	2.2E+05	5.8E+04	na	--	--	6.3E+05	2.1E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	1.9E+01	3.0E+01	na	4.8E+00	2.8E+00	na	--	--	1.4E+01	1.0E+01	na	--
Chlorobenzene	0	--	--	na	--	--	na	--	--	na	2.1E+04	1.1E+05	--	--	na	1.1E+04

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations					
		Chronic		HH (PWS)		Chronic		HH (PWS)		Chronic		HH (PWS)		Chronic		HH (PWS)		Chronic		HH (PWS)			
		Acute	HH	Acute	HH	Acute	HH	Acute	HH	Acute	HH	Acute	HH	Acute	HH	Acute	HH	Acute	HH	Acute	HH		
Chlorobromomethane ^c	0	--	3.4E+02	--	4.8E+03	--	na	--	3.4E+01	--	4.8E+02	--	na	--	4.8E+02	--	na	--	na	--	4.8E+02	na	4.8E+02
Chloroform ^c	0	--	2.9E+04	--	4.1E+05	--	na	--	2.9E+03	--	4.1E+04	--	na	--	4.1E+04	--	na	--	na	--	4.1E+04	na	4.1E+04
2-Chloronaphthalene	0	--	4.3E+03	--	2.3E+04	--	na	--	4.3E+02	--	2.3E+03	--	na	--	2.3E+03	--	na	--	na	--	2.3E+03	na	2.3E+03
2-Chlorophenol	0	--	4.0E+02	--	2.1E+03	--	na	--	4.0E+01	--	2.1E+02	--	na	--	2.1E+02	--	na	--	na	--	2.1E+02	na	2.1E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	8.5E-02	1.1E-01	2.1E-02	1.0E-02	2.1E-02	1.0E-02	3.7E-02	6.1E-02	3.7E-02	6.1E-02	3.7E-02	6.1E-02	3.7E-02	6.1E-02	3.7E-02	6.1E-02	3.7E-02	6.1E-02	3.7E-02	6.1E-02
Chromium III	0	4.2E+02	5.4E+01	4.3E+02	1.5E+02	1.0E+02	1.4E+01	1.0E+02	1.4E+01	4.9E+01	3.1E+02	4.9E+01	3.1E+02	4.9E+01	3.1E+02	4.9E+01	3.1E+02	4.9E+01	3.1E+02	4.9E+01	3.1E+02	4.9E+01	3.1E+02
Chromium VI	0	1.6E+01	1.1E+01	1.6E+01	3.0E+01	4.0E+00	2.8E+00	4.0E+00	2.8E+00	1.0E+01	1.2E+01	1.0E+01	1.2E+01	1.0E+01	1.2E+01	1.0E+01	1.2E+01	1.0E+01	1.2E+01	1.0E+01	1.2E+01	1.0E+01	1.2E+01
Chromium, Total	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene ^c	0	--	4.9E-01	--	6.9E+00	--	na	--	4.9E-02	--	6.9E-01	--	na	--	6.9E-01	--	na	--	na	--	6.9E-01	na	6.9E-01
Copper	0	9.4E+00	6.5E+00	9.6E+00	1.8E+01	2.3E+00	1.6E+00	2.3E+00	1.6E+00	5.9E+00	6.9E+00	5.9E+00	6.9E+00	5.9E+00	6.9E+00	5.9E+00	6.9E+00	5.9E+00	6.9E+00	5.9E+00	6.9E+00	5.9E+00	6.9E+00
Cyanide	0	2.2E+01	5.2E+00	2.2E+01	1.4E+01	5.5E+00	1.3E+00	5.5E+00	1.3E+00	4.9E+00	1.6E+01	4.9E+00	1.6E+01	4.9E+00	1.6E+01	4.9E+00	1.6E+01	4.9E+00	1.6E+01	4.9E+00	1.6E+01	4.9E+00	1.6E+01
DDD ^c	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DDE ^c	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DDT ^c	0	1.1E+00	1.0E-03	1.1E+00	2.7E-03	2.8E-01	2.5E-04	2.8E-01	2.5E-04	9.1E-04	8.1E-01	9.1E-04	8.1E-01	9.1E-04	8.1E-01	9.1E-04	8.1E-01	9.1E-04	8.1E-01	9.1E-04	8.1E-01	9.1E-04	8.1E-01
Demeton	0	--	1.0E-01	--	2.7E-01	--	na	--	4.9E-02	--	6.9E-01	--	na	--	6.9E-01	--	na	--	na	--	6.9E-01	na	6.9E-01
Dibenz(a,h)anthracene ^c	0	--	na	--	6.4E+04	--	na	--	1.2E+03	--	6.4E+03	--	na	--	6.4E+03	--	na	--	na	--	6.4E+03	na	6.4E+03
Dibutyl phthalate	0	--	1.6E+04	--	2.2E+05	--	na	--	1.6E+03	--	2.2E+04	--	na	--	2.2E+04	--	na	--	na	--	2.2E+04	na	2.2E+04
Dichloromethane	0	--	1.7E+04	--	9.1E+04	--	na	--	1.7E+03	--	9.1E+03	--	na	--	9.1E+03	--	na	--	na	--	9.1E+03	na	9.1E+03
(Methylene Chloride) ^c	0	--	2.6E+03	--	1.4E+04	--	na	--	2.6E+02	--	1.4E+03	--	na	--	1.4E+03	--	na	--	na	--	1.4E+03	na	1.4E+03
1,2-Dichlorobenzene	0	--	2.6E+03	--	1.4E+04	--	na	--	2.6E+02	--	1.4E+03	--	na	--	1.4E+03	--	na	--	na	--	1.4E+03	na	1.4E+03
1,3-Dichlorobenzene	0	--	2.6E+03	--	1.4E+04	--	na	--	2.6E+02	--	1.4E+03	--	na	--	1.4E+03	--	na	--	na	--	1.4E+03	na	1.4E+03
1,4-Dichlorobenzene	0	--	7.7E-01	--	1.1E+01	--	na	--	7.7E-02	--	1.1E+00	--	na	--	1.1E+00	--	na	--	na	--	1.1E+00	na	1.1E+00
3,3-Dichlorobenzidide ^c	0	--	4.6E+02	--	6.5E+03	--	na	--	4.6E+01	--	6.5E+02	--	na	--	6.5E+02	--	na	--	na	--	6.5E+02	na	6.5E+02
Dichlorobromomethane ^c	0	--	9.9E+02	--	1.4E+04	--	na	--	9.9E+01	--	1.4E+03	--	na	--	1.4E+03	--	na	--	na	--	1.4E+03	na	1.4E+03
1,2-Dichloroethane ^c	0	--	1.7E+04	--	9.1E+04	--	na	--	1.7E+03	--	9.1E+03	--	na	--	9.1E+03	--	na	--	na	--	9.1E+03	na	9.1E+03
1,1-Dichloroethylene	0	--	1.4E+05	--	7.5E+05	--	na	--	1.4E+04	--	7.5E+04	--	na	--	7.5E+04	--	na	--	na	--	7.5E+04	na	7.5E+04
1,2-trans-dichloroethylene	0	--	7.9E+02	--	4.2E+03	--	na	--	7.9E+01	--	4.2E+02	--	na	--	4.2E+02	--	na	--	na	--	4.2E+02	na	4.2E+02
2,4-Dichlorophenol	0	--	3.9E+02	--	5.5E+03	--	na	--	3.9E+01	--	5.5E+02	--	na	--	5.5E+02	--	na	--	na	--	5.5E+02	na	5.5E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	1.7E+03	--	9.1E+03	--	na	--	1.7E+02	--	9.1E+02	--	na	--	9.1E+02	--	na	--	na	--	9.1E+02	na	9.1E+02
1,2-Dichloropropane ^c	0	--	2.4E-01	--	5.6E-02	2.5E-01	1.5E-01	6.0E-02	1.4E-02	1.8E-01	5.1E-02	1.8E-01	5.1E-02	1.8E-01	5.1E-02	1.8E-01	5.1E-02	1.8E-01	5.1E-02	1.8E-01	5.1E-02	1.8E-01	5.1E-02
1,3-Dichloropropene	0	--	1.4E-03	--	2.0E-02	--	na	--	1.4E-04	--	2.0E-03	--	na	--	2.0E-03	--	na	--	na	--	2.0E-03	na	2.0E-03
Dieldrin ^c	0	--	1.2E+05	--	6.4E+05	--	na	--	1.2E+04	--	6.4E+04	--	na	--	6.4E+04	--	na	--	na	--	6.4E+04	na	6.4E+04
Diethyl Phthalate	0	--	5.9E+01	--	8.3E+02	--	na	--	5.9E+00	--	8.3E+01	--	na	--	8.3E+01	--	na	--	na	--	8.3E+01	na	8.3E+01
Di-2-Ethylhexyl Phthalate ^c	0	--	2.3E+03	--	1.6E+04	--	na	--	2.3E+02	--	1.6E+03	--	na	--	1.6E+03	--	na	--	na	--	1.6E+03	na	1.6E+03
2,4-Dimethylphenol	0	--	2.9E+06	--	1.6E+07	--	na	--	2.9E+05	--	1.6E+06	--	na	--	1.6E+06	--	na	--	na	--	1.6E+06	na	1.6E+06
Dimethyl Phthalate	0	--	1.2E+04	--	6.4E+04	--	na	--	1.2E+03	--	6.4E+03	--	na	--	6.4E+03	--	na	--	na	--	6.4E+03	na	6.4E+03
Di-n-Butyl Phthalate	0	--	1.4E+04	--	7.5E+04	--	na	--	1.4E+03	--	7.5E+03	--	na	--	7.5E+03	--	na	--	na	--	7.5E+03	na	7.5E+03
2,4-Dinitrophenol	0	--	7.6E+02	--	4.1E+03	--	na	--	7.7E+01	--	4.1E+02	--	na	--	4.1E+02	--	na	--	na	--	4.1E+02	na	4.1E+02
2-Methyl-4,6-Dinitrophenol	0	--	9.1E+01	--	1.3E+03	--	na	--	9.1E+00	--	1.3E+02	--	na	--	1.3E+02	--	na	--	na	--	1.3E+02	na	1.3E+02
2,4-Dinitrotoluene ^c	0	--	1.2E+06	--	na	--	na	--	1.2E-07	--	na	--	na	--	1.2E-07	--	na	--	na	--	1.2E-07	na	1.2E-07
2,4-Dinitrotoluene ^c	0	--	5.4E+00	--	7.6E+01	--	na	--	5.4E-01	--	7.6E+00	--	na	--	7.6E+00	--	na	--	na	--	7.6E+00	na	7.6E+00
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppq)	0	--	2.2E-01	--	1.5E-01	2.2E-01	1.5E-01	5.5E-02	1.4E-02	1.6E-01	5.1E-02	1.6E-01	5.1E-02	1.6E-01	5.1E-02	1.6E-01	5.1E-02	1.6E-01	5.1E-02	1.6E-01	5.1E-02	1.6E-01	5.1E-02
1,2-Diphenylhydrazine ^c	0	--	2.4E+02	--	1.3E+03	--	na	--	2.4E+01	--	1.3E+02	--	na	--	1.3E+02	--	na	--	na	--	1.3E+02	na	1.3E+02
Alpha-Endosulfan	0	2.2E-01	5.6E-02	2.2E-01	1.5E-01	5.5E-02	1.4E-02	5.5E-02	1.4E-02	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01
Beta-Endosulfan	0	2.2E-01	5.6E-02	2.2E-01	1.5E-01	5.5E-02	1.4E-02	5.5E-02	1.4E-02	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01	1.6E-01
Endosulfan Sulfate	0	--	2.4E+02	--	1.3E+03	--	na	--	2.4E+01	--	1.3E+02	--	na	--	1.3E+02	--	na	--	na	--	1.3E+02	na	1.3E+02
Endrin	0	8.6E-02	3.6E-02	8.8E-02	9.8E-02	2.2E-02	9.0E-03	2.2E-02	9.0E-03	8.1E-02	6.3E-02	8.1E-02	6.3E-02	8.1E-02	6.3E-02	8.1E-02	6.3E-02	8.1E-02	6.3E-02	8.1E-02	6.3E-02	8.1E-02	6.3E-02
Endrin Aldehyde	0	--	8.1E-01	--	4.4E+00	--	na	--	8.1E-01	--	4.4E+00	--	na	--	4.4E+00	--	na	--	na	--	4.4E+00	na	4.4E+00

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations											
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH								
Ethylbenzene	0	--	--	na	2.9E+04	--	--	na	1.6E+05	--	--	na	2.9E+03	--	--	na	1.6E+04	--	--	na	1.6E+04	--	--	na	1.6E+04	--	--	na	1.6E+04
Fluoranthene	0	--	--	na	3.7E+02	--	--	na	2.0E+03	--	--	na	3.7E+01	--	--	na	2.0E+02	--	--	na	2.0E+02	--	--	na	2.0E+02	--	--	na	2.0E+02
Fluorene	0	--	--	na	1.4E+04	--	--	na	7.5E+04	--	--	na	1.4E+03	--	--	na	7.5E+03	--	--	na	7.5E+03	--	--	na	7.5E+03	--	--	na	7.5E+03
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	2.7E-02	--	na	--	2.7E-02	--	na	--	2.5E-03	--	na	--	9.1E-03	--	na	--	9.1E-03	--	na	--	9.1E-03	--	na	--
Heptachlor ^c	0	5.2E-01	3.8E-03	na	2.1E-03	5.3E-01	1.0E-02	na	2.9E-02	5.3E-01	1.0E-02	na	2.1E-04	1.3E-01	9.5E-04	na	2.9E-03	3.8E-01	9.5E-04	na	2.9E-03	3.8E-01	9.5E-04	na	2.9E-03	3.8E-01	9.5E-04	na	2.9E-03
Heptachlor Epoxide ^d	0	5.2E-01	3.8E-03	na	1.1E-03	5.3E-01	1.0E-02	na	1.5E-02	5.3E-01	1.0E-02	na	1.1E-04	1.3E-01	9.5E-04	na	1.5E-03	3.8E-01	9.5E-04	na	1.5E-03	3.8E-01	9.5E-04	na	1.5E-03	3.8E-01	9.5E-04	na	1.5E-03
Hexachlorobenzene ^d	0	--	--	na	7.7E-03	--	--	na	1.1E-01	--	--	na	7.7E-04	--	--	na	1.1E-02	--	--	na	1.1E-02	--	--	na	1.1E-02	--	--	na	1.1E-02
Hexachlorobutadiene ^d	0	--	--	na	5.0E+02	--	--	na	7.0E+03	--	--	na	5.0E+01	--	--	na	7.0E+02	--	--	na	7.0E+02	--	--	na	7.0E+02	--	--	na	7.0E+02
Hexachlorocyclohexane	0	--	--	na	1.3E-01	--	--	na	1.8E+00	--	--	na	1.3E-02	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	na	1.8E-01
Hexachlorocyclohexene	0	--	--	na	4.6E-01	--	--	na	6.5E+00	--	--	na	4.6E-02	--	--	na	6.5E-01	--	--	na	6.5E-01	--	--	na	6.5E-01	--	--	na	6.5E-01
Hexachlorocyclohexane	0	9.5E-01	na	na	6.3E-01	9.7E-01	--	na	8.8E+00	9.7E-01	--	na	6.3E-02	2.4E-01	--	na	8.8E-01	7.0E-01	--	na	8.8E-01	7.0E-01	--	na	8.8E-01	7.0E-01	--	na	8.8E-01
Hexachlorocyclopentadiene	0	--	--	na	1.7E+04	--	--	na	9.1E+04	--	--	na	1.7E+03	--	--	na	9.1E+03	--	--	na	9.1E+03	--	--	na	9.1E+03	--	--	na	9.1E+03
Hexachloroethane ^d	0	--	--	na	8.9E+01	--	--	na	1.2E+03	--	--	na	8.9E+00	--	--	na	1.2E+02	--	--	na	1.2E+02	--	--	na	1.2E+02	--	--	na	1.2E+02
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	5.5E+00	na	--	--	5.5E+00	na	--	--	5.0E-01	na	--	--	1.8E+00	na	--	--	1.8E+00	na	--	--	1.8E+00	na	--
Indeno (1,2,3-cd) pyrene ^c	0	--	--	na	4.9E-01	--	--	na	6.9E+00	--	--	na	4.9E-02	--	--	na	6.9E-01	--	--	na	6.9E-01	--	--	na	6.9E-01	--	--	na	6.9E-01
Iron	0	--	--	na	2.6E+04	--	--	na	3.6E+05	--	--	na	2.6E+03	--	--	na	3.6E+04	--	--	na	3.6E+04	--	--	na	3.6E+04	--	--	na	3.6E+04
Isophorone ^d	0	--	0.0E+00	na	--	--	0.0E+00	na	--	0.0E+00	--	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--
Kepon	0	7.3E+01	8.3E+00	na	--	7.5E+01	2.3E+01	na	--	7.5E+01	2.3E+01	na	--	1.8E+01	2.1E+00	na	--	5.4E+01	1.8E+01	2.1E+00	na	--	5.4E+01	1.8E+01	2.1E+00	na	--	5.4E+01	1.8E+01
Lead	0	--	1.0E-01	na	--	--	2.7E-01	na	--	--	2.7E-01	na	--	--	2.5E-02	na	--	--	9.1E-02	na	--	--	9.1E-02	na	--	--	9.1E-02	na	--
Malathion	0	--	--	na	2.6E+04	--	--	na	3.6E+05	--	--	na	2.6E+03	--	--	na	3.6E+04	--	--	na	3.6E+04	--	--	na	3.6E+04	--	--	na	3.6E+04
Manganese	0	1.4E+00	7.7E-01	na	5.1E-02	1.4E+00	2.1E+00	na	2.7E-01	1.4E+00	2.1E+00	na	5.1E-03	3.5E-01	1.9E-01	na	5.1E-03	1.0E+00	7.0E-01	1.9E-01	na	5.1E-03	1.0E+00	7.0E-01	1.9E-01	na	5.1E-03	1.0E+00	
Mercury	0	--	3.0E-02	na	4.0E+03	--	--	na	2.1E+04	--	--	na	4.0E+02	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	na	2.1E+03
Methyl Bromide	0	--	0.0E+00	na	--	--	8.2E-02	na	--	8.2E-02	--	na	--	--	7.5E-03	na	--	--	2.7E-02	na	--	--	2.7E-02	na	--	--	2.7E-02	na	--
Methoxychlor	0	--	0.0E+00	na	2.1E+04	--	--	na	1.1E+05	--	--	na	2.1E+03	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	na	1.1E+04
Mirex	0	--	--	na	4.6E+03	--	--	na	2.5E+04	--	--	na	4.6E+02	3.3E+01	3.7E+00	na	4.6E+02	9.7E+01	3.3E+01	3.7E+00	na	4.6E+02	9.7E+01	3.3E+01	3.7E+00	na	4.6E+02	9.7E+01	
Monochlorobenzene	0	1.3E+02	1.5E+01	na	4.6E+03	1.3E+02	4.0E+01	na	2.5E+04	1.3E+02	4.0E+01	na	4.6E+02	3.3E+01	3.7E+00	na	4.6E+02	9.7E+01	3.3E+01	3.7E+00	na	4.6E+02	9.7E+01	3.3E+01	3.7E+00	na	4.6E+02	9.7E+01	
Nickel	0	6.5E-02	1.3E-02	na	--	6.6E-02	3.5E-02	na	--	6.6E-02	3.5E-02	na	--	1.6E-02	3.3E-03	na	--	4.8E-02	1.6E-02	3.3E-03	na	--	4.8E-02	1.6E-02	3.3E-03	na	--	4.8E-02	
Nitrate (as N)	0	--	1.4E-02	na	--	--	3.8E-02	na	--	--	3.8E-02	na	--	--	3.5E-03	na	--	--	1.3E-02	3.5E-03	na	--	1.3E-02	3.5E-03	na	--	1.3E-02	3.5E-03	
Nitrobenzene	0	--	1.4E-02	na	--	--	3.8E-02	na	--	--	3.8E-02	na	--	--	3.5E-03	na	--	--	1.3E-02	3.5E-03	na	--	1.3E-02	3.5E-03	na	--	1.3E-02	3.5E-03	
N-Nitrosodimethylamine ^d	0	--	1.4E-02	na	--	--	3.8E-02	na	--	--	3.8E-02	na	--	--	3.5E-03	na	--	--	1.3E-02	3.5E-03	na	--	1.3E-02	3.5E-03	na	--	1.3E-02	3.5E-03	
N-Nitrosodiphenylamine ^d	0	--	1.4E-02	na	--	--	3.8E-02	na	--	--	3.8E-02	na	--	--	3.5E-03	na	--	--	1.3E-02	3.5E-03	na	--	1.3E-02	3.5E-03	na	--	1.3E-02	3.5E-03	
N-Nitrosodi-n-propylamine ^d	0	--	1.4E-02	na	--	--	3.8E-02	na	--	--	3.8E-02	na	--	--	3.5E-03	na	--	--	1.3E-02	3.5E-03	na	--	1.3E-02	3.5E-03	na	--	1.3E-02	3.5E-03	
Parathion	0	6.5E-02	1.3E-02	na	4.6E+03	6.6E-02	3.5E-02	na	2.0E+02	6.6E-02	3.5E-02	na	4.6E+02	1.6E-02	3.3E-03	na	4.6E+02	9.7E+01	1.6E-02	3.3E-03	na	4.6E+02	9.7E+01	1.6E-02	3.3E-03	na	4.6E+02	9.7E+01	
PCB-1016	0	--	1.4E-02	na	--	--	3.8E-02	na	--	--	3.8E-02	na	--	--	3.5E-03	na	--	--	1.3E-02	3.5E-03	na	--	1.3E-02	3.5E-03	na	--	1.3E-02	3.5E-03	
PCB-1221	0	--	1.4E-02	na	--	--	3.8E-02	na	--	--	3.8E-02	na	--	--	3.5E-03	na	--	--	1.3E-02	3.5E-03	na	--	1.3E-02	3.5E-03	na	--	1.3E-02	3.5E-03	
PCB-1232	0	--	1.4E-02	na	--	--	3.8E-02	na	--	--	3.8E-02	na	--	--	3.5E-03	na	--	--	1.3E-02	3.5E-03	na	--	1.3E-02	3.5E-03	na	--	1.3E-02	3.5E-03	
PCB-1242	0	--	1.4E-02	na	--	--	3.8E-02	na	--	--	3.8E-02	na	--	--	3.5E-03	na	--	--	1.3E-02	3.5E-03	na	--	1.3E-02	3.5E-03	na	--	1.3E-02	3.5E-03	
PCB-1248	0	--	1.4E-02	na	--	--	3.8E-02	na	--	--	3.8E-02	na	--	--	3.5E-03	na	--	--	1.3E-02	3.5E-03	na	--	1.3E-02	3.5E-03	na	--	1.3E-02	3.5E-03	
PCB-1254	0	--	1.4E-02	na	--	--	3.8E-02	na	--	--	3.8E-02	na	--	--	3.5E-03	na	--	--	1.3E-02	3.5E-03	na	--	1.3E-02	3.5E-03	na	--	1.3E-02	3.5E-03	
PCB-1260	0	--	1.4E-02	na	--	--	3.8E-02	na	--	--	3.8E-02	na	--	--	3.5E-03	na	--	--	1.3E-02	3.5E-03	na	--	1.3E-02	3.5E-03	na	--	1.3E-02	3.5E-03	
PCB Total ^f	0	--	--	na	1.7E-03	--	--	na	2.4E-02	--	--	na	1.7E-04	--	--	na	2.4E-03	--	--	na	2.4E-03	--	--	na	2.4E-03	--	--	na	2.4E-03

Parameter (ug/l unless noted) c	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	
Pentachlorophenol ^c	0	1.2E+01	9.0E+00	na	1.2E+01	2.4E+01	na	2.9E+00	2.2E+00	8.2E+00	8.2E+00	na	8.6E+00	8.2E+00	1.2E+02	na	1.2E+02
Phenol	0	-	-	na	-	-	na	-	-	4.6E+05	4.6E+05	na	-	-	2.5E+06	na	2.5E+06
Pyrene	0	-	-	na	-	-	na	-	-	1.1E+03	1.1E+03	na	-	-	5.9E+03	na	5.9E+03
Radionuclides (pCi/l except Beta/Photon)	0	-	-	na	-	-	na	-	-	-	-	na	-	-	-	na	-
Gross Alpha Activity Beta and Photon Activity (mrem/yr)	0	-	-	na	-	-	na	-	-	1.5E+00	1.5E+00	na	-	-	8.1E+00	na	8.1E+00
Strontium-90	0	-	-	na	-	-	na	-	-	4.0E-01	4.0E-01	na	-	-	2.1E+00	na	2.1E+00
Tritium	0	-	-	na	-	-	na	-	-	8.0E-01	8.0E-01	na	-	-	4.3E+00	na	4.3E+00
Selenium	0	2.0E+01	5.0E+00	na	2.0E+01	1.4E+01	na	5.0E+00	1.3E+00	2.0E+03	2.0E+03	na	1.5E+01	4.6E+00	1.1E+04	na	1.1E+04
Silver	0	1.8E+00	-	na	1.8E+00	-	na	4.5E-01	-	1.1E+03	1.1E+03	na	1.3E+00	1.5E+01	5.9E+03	na	5.9E+03
Sulfate	0	-	-	na	-	-	na	-	-	-	-	na	-	-	-	na	-
1,1,2,2-Tetrachloroethane ^g	0	-	-	na	-	-	na	-	-	1.1E+01	1.1E+01	na	-	-	1.5E+02	na	1.5E+02
Tetrachloroethylen ^g	0	-	-	na	-	-	na	-	-	8.9E+00	8.9E+00	na	-	-	1.2E+02	na	1.2E+02
Thallium	0	-	-	na	-	-	na	-	-	6.3E+01	6.3E+01	na	-	-	3.4E+00	na	3.4E+00
Toluene	0	-	-	na	-	-	na	-	-	2.0E+05	2.0E+04	na	-	-	1.1E+05	na	1.1E+05
Total dissolved solids	0	-	-	na	-	-	na	-	-	-	-	na	-	-	-	na	-
Toxaphene ^c	0	7.3E-01	2.0E-04	na	7.5E-03	5.5E-04	na	1.8E-01	5.0E-05	7.5E-04	7.5E-04	na	5.4E-01	1.8E-04	1.1E-02	na	1.1E-02
Tributyltin	0	4.6E-01	6.3E-02	na	4.7E-01	1.7E-01	na	1.2E-01	1.6E-02	-	-	na	3.4E-01	5.8E-02	-	na	-
1,2,4-Trichlorobenzene	0	-	-	na	-	-	na	-	-	9.4E+02	9.4E+01	na	-	-	5.0E+02	na	5.0E+02
1,1,2-Trichloroethane ^g	0	-	-	na	-	-	na	-	-	4.2E+02	4.2E+01	na	-	-	5.9E+02	na	5.9E+02
Trichloroethylene ^c	0	-	-	na	-	-	na	-	-	8.1E+02	8.1E+01	na	-	-	1.1E+03	na	1.1E+03
2,4,6-Trichlorophenol ^c	0	-	-	na	-	-	na	-	-	6.5E+01	6.5E+00	na	-	-	9.1E+01	na	9.1E+01
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	-	-	na	-	-	na	-	-	-	-	na	-	-	-	na	-
Vinyl Chloride ^g	0	-	-	na	-	-	na	-	-	6.1E+01	6.1E+00	na	-	-	-	na	-
Zinc	0	8.5E+01	8.5E+01	na	8.7E+01	2.3E+02	na	2.1E+01	2.1E+01	6.9E+03	6.9E+03	na	6.2E+01	7.8E+01	3.7E+04	na	3.7E+04

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
Antidegradation WLAs are based upon a complete mix.
= (0.1(WQC - background conc.) + background conc.) for acute and chronic
= (0.25(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Metal	Target Value (SSTV)
Antimony	2.3E+03
Arsenic	8.2E+01
Barium	na
Cadmium	4.6E-01
Chromium III	3.0E+01
Chromium VI	4.7E+00
Copper	2.6E+00
Iron	na
Lead	4.6E+00
Manganese	na
Mercury	2.7E-02
Nickel	8.0E+00
Selenium	2.7E+00
Silver	5.3E-01
Zinc	2.6E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Parameter (ug/l unless noted)	Background		Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
	Conc.		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane ^g	0				na	8.7E+03			na			3.4E+01					8.7E+02				na	8.7E+02
Chloroform ^c	0				na	7.4E+05			na			2.9E+03					7.4E+04				na	7.4E+04
2-Chloronaphthalene	0				na	9.8E+04			na			4.3E+02					9.8E+03				na	9.8E+03
2-Chlorophenol	0				na	9.1E+03			na			4.0E+01					9.1E+02				na	9.1E+02
Chlorpyrifos	0		8.3E-02	4.1E-02	na	9.2E-01	1.9E+00	9.2E-01	na	2.1E-02	1.0E-02	2.1E-02	1.0E-02	na	4.8E-01	2.3E-01	4.8E-01	2.3E-01	na	4.8E-01	2.3E-01	na
Chromium III	0		4.2E+02	5.4E+01	na	1.2E+03	9.3E+03	1.2E+03	na	1.0E+02	1.4E+01	1.0E+02	1.4E+01	na	2.3E+03	3.0E+02	2.3E+03	3.0E+02	na	2.3E+03	3.0E+02	na
Chromium VI	0		1.6E+01	1.1E+01	na	2.5E+02	3.6E+02	2.5E+02	na	4.0E+00	2.8E+00	4.0E+00	2.8E+00	na	8.9E+01	6.2E+01	8.9E+01	6.2E+01	na	8.9E+01	6.2E+01	na
Chromium, Total	0				na				na					na					na			
Chrysene ^c	0				na	1.2E+01			na			4.9E-02					1.2E+00				na	1.2E+00
Copper	0		9.4E+00	6.5E+00	na	1.5E+02	2.1E+02	1.5E+02	na	2.3E+00	1.6E+00	2.3E+00	1.6E+00	na	5.2E+01	3.6E+01	5.2E+01	3.6E+01	na	5.2E+01	3.6E+01	na
Cyanide	0		2.2E+01	5.2E+00	na	1.2E+02	4.9E+02	1.2E+02	na	5.5E+00	1.3E+00	5.5E+00	1.3E+00	na	1.2E+02	2.9E+01	1.2E+02	2.9E+01	na	1.2E+02	2.9E+01	na
DDD ^c	0				na	2.1E-01			na			8.4E-04					2.1E-02				na	2.1E-02
DDE ^c	0				na	1.5E-01			na			5.9E-04					1.5E-02				na	1.5E-02
DDT ^c	0		1.1E+00	1.0E-03	na	5.9E-03	2.5E+01	2.2E-02	na	2.8E-01	2.5E-04	2.8E-01	2.5E-04	na	6.1E+00	5.6E-03	6.1E+00	5.6E-03	na	6.1E+00	5.6E-03	na
Demeton	0				na	2.2E+00			na			2.5E-02							na			
Dibenz(a,h)anthracene ^c	0				na	1.2E+01			na			4.9E-02					1.2E+00				na	1.2E+00
Dibutyl phthalate	0				na	1.2E+04			na			1.2E+03					1.2E+04				na	1.2E+04
Dichloromethane	0				na	1.6E+04			na			1.6E+03					1.6E+04				na	1.6E+04
(Methylene Chloride) ^c	0				na	1.7E+04			na			1.7E+03					1.7E+04				na	1.7E+04
1,2-Dichlorobenzene	0				na	2.6E+03			na			2.6E+02					2.6E+03				na	2.6E+03
1,3-Dichlorobenzene	0				na	2.6E+03			na			2.6E+02					2.6E+03				na	2.6E+03
1,4-Dichlorobenzene	0				na	2.6E+03			na			2.6E+02					2.6E+03				na	2.6E+03
3,3-Dichlorobenzidide ^g	0				na	7.7E-01			na			7.7E-02					7.7E-01				na	7.7E-01
Dichlorobromomethane ^c	0				na	4.8E+02			na			4.8E+01					4.8E+02				na	4.8E+02
1,2-Dichloroethane ^c	0				na	9.9E+02			na			9.9E+01					9.9E+02				na	9.9E+02
1,1-Dichloroethylene	0				na	1.7E+04			na			1.7E+03					1.7E+04				na	1.7E+04
1,2-trans-dichloroethylene	0				na	1.4E+05			na			1.4E+04					1.4E+05				na	1.4E+05
2,4-Dichlorophenol	0				na	7.9E+02			na			7.9E+01					7.9E+02				na	7.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0				na	9.9E+03			na			9.9E+01					9.9E+03				na	9.9E+03
1,2-Dichloropropane ^g	0				na	3.9E+04			na			3.9E+02					3.9E+04				na	3.9E+04
1,3-Dichloropropene	0				na	1.7E+03			na			1.7E+02					1.7E+03				na	1.7E+03
Dieldrin ^c	0		2.4E-01	5.6E-02	na	1.4E+03	5.4E+00	1.3E+00	na	6.0E-02	1.4E-02	6.0E-02	1.4E-02	na	1.3E+00	3.1E-01	1.3E+00	3.1E-01	na	1.3E+00	3.1E-01	na
Diethyl Phthalate	0				na	1.2E+05			na			1.2E+04					1.2E+05				na	1.2E+05
Di-2-Ethylhexyl Phthalate ^c	0				na	5.9E+01			na			5.9E+00					5.9E+01				na	5.9E+01
2,4-Dimethylphenol	0				na	2.3E+03			na			2.3E+02					2.3E+03				na	2.3E+03
Dimethyl Phthalate	0				na	2.9E+06			na			2.9E+05					2.9E+06				na	2.9E+06
Di-n-Butyl Phthalate	0				na	1.2E+04			na			1.2E+03					1.2E+04				na	1.2E+04
2,4-Dinitrophenol	0				na	1.4E+04			na			1.4E+03					1.4E+04				na	1.4E+04
2-Methyl-4,6-Dinitrophenol	0				na	7.65E+02			na			7.7E+01					7.65E+02				na	7.65E+02
2,4-Dinitrotoluene ^c	0				na	9.1E+01			na			9.1E+00					9.1E+01				na	9.1E+01
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppq)	0				na	1.2E-06			na			1.2E-06					1.2E-06				na	1.2E-06
1,2-Diphenylhydrazine ^g	0				na	5.4E+00			na			5.4E-01					5.4E+00				na	5.4E+00
Alpha-Endosulfan	0		2.2E-01	5.6E-02	na	2.4E+02	4.9E+00	1.3E+00	na	5.5E-02	1.4E-02	5.5E-02	1.4E-02	na	1.2E+00	3.1E-01	1.2E+00	3.1E-01	na	1.2E+00	3.1E-01	na
Beta-Endosulfan	0		2.2E-01	5.6E-02	na	2.4E+02	4.9E+00	1.3E+00	na	5.5E+03	1.4E-02	5.5E+03	1.4E-02	na	1.2E+00	3.1E-01	1.2E+00	3.1E-01	na	1.2E+00	3.1E-01	na
Endosulfan Sulfate	0				na	2.4E+02			na			2.4E+01					2.4E+02				na	2.4E+02
Endrin	0		8.6E-02	3.6E-02	na	8.1E-01	1.9E+00	8.1E-01	na	2.2E-02	9.0E-03	2.2E-02	9.0E-03	na	4.8E-01	2.0E-01	4.8E-01	2.0E-01	na	4.8E-01	2.0E-01	na
Endrin Aldehyde	0				na	8.1E-01			na			8.1E-02					8.1E-01				na	8.1E-01

Parameter (ug/l unless noted)	Background		Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
	Conc.		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0				na	2.9E+04			na	6.6E+05			na	2.9E+03			na	6.6E+04			na	6.6E+04
Fluoranthene	0				na	3.7E+02			na	8.5E+03			na	3.7E+01			na	8.5E+02			na	8.5E+02
Fluorene	0				na	1.4E+04			na	3.2E+05			na	1.4E+03			na	3.2E+04			na	3.2E+04
Foaming Agents	0				na				na				na				na				na	
Guthion	0				na	1.0E-02			na	2.2E-01			na	2.5E-03			na	5.6E-02			na	5.6E-02
Heptachlor ^c	0				na	3.8E-03			na	8.5E-02			na	2.1E-04			na	5.3E-03			na	5.3E-03
Heptachlor Epoxide ^d	0				na	3.8E-03			na	8.5E-02			na	2.1E-04			na	2.8E-03			na	2.8E-03
Hexachlorobenzene ^d	0				na	7.7E-03			na	2.0E-01			na	7.7E-04			na	2.0E-02			na	2.0E-02
Hexachlorobutadiene ^d	0				na	5.0E+02			na	1.3E+04			na	5.0E+01			na	1.3E+03			na	1.3E+03
Hexachlorocyclohexane	0				na	1.3E-01			na	3.3E+00			na	1.3E-02			na	3.3E-01			na	3.3E-01
Hexachlorocyclohexane	0				na	4.6E-01			na	1.2E+01			na	4.6E-02			na	1.2E+00			na	1.2E+00
Beta-BHC ^c	0				na	6.3E-01			na	1.6E+01			na	6.3E-02			na	1.6E+00			na	1.6E+00
Gamma-BHC ^c (Lindane)	0				na	9.5E-01			na	2.1E+01			na	2.4E-01			na	5.3E+00			na	5.3E+00
Hexachlorocyclopentadiene	0				na	1.7E+04			na	3.9E+05			na	1.7E+03			na	3.9E+04			na	3.9E+04
Hexachloroethane ^d	0				na	8.9E+01			na	2.3E+03			na	8.9E+00			na	2.3E+02			na	2.3E+02
Hydrogen Sulfide	0				na	2.0E+00			na	4.5E+01			na	5.0E-01			na	1.1E+01			na	1.1E+01
Indeno (1,2,3-cd) pyrene ^c	0				na	4.9E-01			na	1.2E+01			na	4.9E-02			na	1.2E+00			na	1.2E+00
Iron	0				na	2.6E+04			na	6.6E+05			na	2.6E+03			na	6.6E+04			na	6.6E+04
Isophorone ^d	0				na	0.0E+00			na	0.0E+00			na	0.0E+00			na	0.0E+00			na	0.0E+00
Kepona	0				na	7.3E+01			na	1.6E+03			na	1.8E+01			na	4.1E+02			na	4.1E+02
Lead	0				na	1.0E-01			na	2.2E+00			na	2.5E-02			na	5.6E-01			na	5.6E-01
Malathion	0				na	7.7E-01			na	1.2E+01			na	7.7E-01			na	1.2E+00			na	1.2E+00
Manganese	0				na	4.0E+03			na	9.1E+04			na	4.0E+02			na	9.1E+03			na	9.1E+03
Mercury	0				na	3.0E-02			na	6.7E-01			na	7.5E-03			na	1.7E-01			na	1.7E-01
Methyl Bromide	0				na	0.0E+00			na	0.0E+00			na	0.0E+00			na	0.0E+00			na	0.0E+00
Methoxychlor	0				na	2.1E+04			na	4.8E+05			na	2.1E+03			na	4.8E+04			na	4.8E+04
Mirex	0				na	4.6E+03			na	1.1E+05			na	4.6E+02			na	1.1E+04			na	1.1E+04
Monochlorobenzene	0				na	1.5E+01			na	3.3E+02			na	3.7E+00			na	7.4E+02			na	7.4E+02
Nickel	0				na	6.5E-02			na	1.4E+00			na	1.6E-02			na	3.6E-01			na	3.6E-01
Nitrate (as N)	0				na	1.4E-02			na	3.1E-01			na	3.5E-03			na	7.9E-02			na	7.9E-02
Nitrobenzene	0				na	1.4E-02			na	3.1E-01			na	3.5E-03			na	7.9E-02			na	7.9E-02
N-Nitrosodimethylamine ^d	0				na	1.4E-02			na	3.1E-01			na	3.5E-03			na	7.9E-02			na	7.9E-02
N-Nitrosodiphenylamine ^d	0				na	1.4E-02			na	3.1E-01			na	3.5E-03			na	7.9E-02			na	7.9E-02
N-Nitrosodi-n-propylamine ^d	0				na	1.4E-02			na	3.1E-01			na	3.5E-03			na	7.9E-02			na	7.9E-02
Parathion	0				na	6.5E-02			na	1.4E+00			na	1.6E-02			na	3.6E-01			na	3.6E-01
PCB-1016	0				na	1.4E-02			na	3.1E-01			na	3.5E-03			na	7.9E-02			na	7.9E-02
PCB-1221	0				na	1.4E-02			na	3.1E-01			na	3.5E-03			na	7.9E-02			na	7.9E-02
PCB-1232	0				na	1.4E-02			na	3.1E-01			na	3.5E-03			na	7.9E-02			na	7.9E-02
PCB-1242	0				na	1.4E-02			na	3.1E-01			na	3.5E-03			na	7.9E-02			na	7.9E-02
PCB-1248	0				na	1.4E-02			na	3.1E-01			na	3.5E-03			na	7.9E-02			na	7.9E-02
PCB-1254	0				na	1.4E-02			na	3.1E-01			na	3.5E-03			na	7.9E-02			na	7.9E-02
PCB-1260	0				na	1.4E-02			na	3.1E-01			na	3.5E-03			na	7.9E-02			na	7.9E-02
PCB Totals ^f	0				na	1.7E-03			na	4.3E-02			na	1.7E-04			na	4.3E-03			na	4.3E-03

Parameter (ug/l unless noted) c	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)
Pentachlorophenol ^c	0	1.2E+01	9.0E+00	na	2.6E+02	2.0E+02	na	2.9E+00	2.2E+00	8.2E+00	6.5E+01	5.0E+01	na	2.1E+02	5.0E+01	na
Phenol	0	--	--	na	--	--	na	--	--	4.6E+05	--	--	na	1.1E+07	--	na
Pyrene	0	--	--	na	--	--	na	--	--	1.1E+03	--	--	na	2.5E+04	--	na
Radionuclides (pCi/l except Beta/Photon)	0	--	--	na	--	--	na	--	--	--	--	--	na	--	--	na
Gross Alpha Activity Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	na	--	--	1.5E+00	--	--	na	3.4E+01	--	na
Strontium-90	0	--	--	na	--	--	na	--	--	4.0E-01	--	--	na	9.1E+00	--	na
Tritium	0	--	--	na	--	--	na	--	--	8.0E-01	--	--	na	1.8E+01	--	na
Selenium	0	2.0E+01	5.0E+00	na	4.5E+02	1.1E+02	na	5.0E+00	1.3E+00	2.0E+03	1.1E+02	2.8E+01	na	4.6E+04	--	na
Silver	0	1.8E+00	--	na	4.0E+01	--	na	4.5E-01	--	1.1E+03	1.0E+01	--	na	2.5E+04	2.8E+01	na
Sulfate	0	--	--	na	--	--	na	--	--	--	--	--	na	--	--	na
1,1,2,2-Tetrachloroethane ^g	0	--	--	na	--	--	na	--	--	1.1E+01	--	--	na	2.8E+02	--	na
Tetrachloroethene ^g	0	--	--	na	--	--	na	--	--	8.9E+00	--	--	na	2.3E+02	--	na
Thallium	0	--	--	na	--	--	na	--	--	6.3E-01	--	--	na	1.4E+01	--	na
Toluene	0	--	--	na	--	--	na	--	--	4.6E+06	--	--	na	4.6E+05	--	na
Total dissolved solids	0	--	--	na	--	--	na	--	--	--	--	--	na	--	--	na
Toxaphene ^c	0	7.3E-01	2.0E-04	na	1.6E+01	4.5E-03	na	1.8E-01	5.0E-05	7.5E-04	4.1E+00	1.1E-03	na	1.9E-02	1.1E-03	na
Tributyltin	0	4.6E-01	6.3E-02	na	1.0E+01	1.4E+00	na	1.2E-01	1.6E-02	--	2.6E+00	3.5E-01	na	--	3.5E-01	na
1,2,4-Trichlorobenzene	0	--	--	na	--	--	na	--	--	9.4E+01	--	--	na	2.1E+03	--	na
1,1,2-Trichloroethane ^g	0	--	--	na	--	--	na	--	--	4.2E+01	--	--	na	1.1E+03	--	na
Trichloroethylene ^c	0	--	--	na	--	--	na	--	--	8.1E+01	--	--	na	2.1E+03	--	na
2,4,6-Trichlorophenol ^c	0	--	--	na	--	--	na	--	--	6.5E+01	--	--	na	1.7E+03	--	na
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	na	--	--	--	--	--	na	--	--	na
Vinyl Chloride ^f	0	--	--	na	--	--	na	--	--	6.1E+01	--	--	na	1.6E+03	--	na
Zinc	0	8.5E+01	8.5E+01	na	1.9E+03	1.9E+03	na	2.1E+01	2.1E+01	6.9E+03	4.7E+02	4.8E+02	na	1.6E+05	4.8E+02	na

Notes:

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- Discharge flow is highest monthly average or Form 20 maximum for industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic = (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Metal	Target Value (SSTV)
Antimony	9.8E+03
Arsenic	5.1E+02
Barium	na
Cadmium	2.8E+00
Chromium III	1.8E+02
Chromium VI	3.6E+01
Copper	2.1E+01
Iron	na
Lead	2.8E+01
Manganese	na
Mercury	1.2E-01
Nickel	4.9E+01
Selenium	1.7E+01
Silver	4.0E+00
Zinc	1.9E+02

Note: do not use QL's lower than the minimum QL's provided in agency guidance

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: APCO Glen Lyn - Outfall 005

Permit No.: VA0000370

Receiving Stream: East River

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information	Stream Flows	Mixing Information	Effluent Information
Mean Hardness (as CaCO ₃) =	1Q10 (Annual) = 3.7 MGD	Annual - 1Q10 Mix = 100 %	Mean Hardness (as CaCO ₃) = 68.2 mg/L
90% Temperature (Annual) =	7Q10 (Annual) = 4.6 MGD	- 7Q10 Mix = 100 %	90% Temp (Annual) = 25.4 deg C
90% Temperature (Wet season) =	3Q10 (Annual) = 5.9 MGD	- 3Q10 Mix = 100 %	90% Temp (Wet season) = deg C
90% Maximum pH =	1Q10 (Wet season) = 6.4 MGD	Wet Season - 1Q10 Mix = 100 %	90% Maximum pH = 8.62 SU
10% Maximum pH =	3Q10 (Wet season) = 13.2 MGD	- 3Q10 Mix = 100 %	10% Maximum pH = 7.29 SU
Tier Designation (1 or 2) =	3Q05 = 6.8 MGD		Discharge Flow = 127.3 MGD
Public Water Supply (PWS) Y/N? =	Harmonic Mean = 20.9 MGD		
Trout Present Y/N? =	Annual Average = 65.7 MGD		
Early Life Stages Present Y/N? =			

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenaphthene	0	-	-	na	2.7E+03	-	na	2.8E+03	-	na	2.7E+02	2.8E+02	-	na	2.8E+02	2.8E+02	2.8E+02
Acrolein	0	-	-	na	7.8E+02	-	na	8.2E+02	-	na	7.8E+01	7.8E+01	-	na	8.2E+01	8.2E+01	8.2E+01
Acrylonitrile ^f	0	-	-	na	6.6E+00	-	na	7.7E+00	-	na	6.6E-01	6.6E-01	-	na	7.7E-01	7.7E-01	7.7E-01
Aldrin ^c	0	3.0E+00	-	na	1.4E-03	3.1E+00	na	1.6E-03	7.5E-01	na	1.4E-04	1.6E-04	7.7E-01	na	1.6E-04	1.6E-04	1.6E-04
Ammonia-N (mg/l) (Yearly)	0	2.55E+00	4.41E-01	na	-	2.6E+00	4.6E-01	-	6.38E-01	1.10E-01	-	-	6.6E-01	1.2E-01	-	-	1.2E-01
Ammonia-N (mg/l) (High Flow)	0	2.55E+00	8.89E-01	na	-	2.7E+00	9.8E-01	-	6.38E-01	2.22E-01	-	-	6.7E-01	2.5E-01	-	-	2.5E-01
Anthracene	0	-	-	na	1.1E+05	-	na	1.2E+05	-	na	1.1E+04	1.2E+04	-	na	1.2E+04	1.2E+04	1.2E+04
Anilmony	0	-	-	na	4.3E+03	-	na	4.5E+03	-	na	4.3E+02	4.3E+02	-	na	4.5E+02	4.5E+02	4.5E+02
Arsenic	0	3.4E+02	1.5E+02	na	-	3.5E+02	1.6E+02	-	8.5E+01	3.8E+01	-	-	8.7E+01	3.9E+01	-	-	3.9E+01
Barium	0	-	-	na	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene ^c	0	-	-	na	7.1E+02	-	na	8.3E+02	-	na	7.1E+01	7.1E+01	-	na	8.3E+01	8.3E+01	8.3E+01
Benzidine ^f	0	-	-	na	5.4E-03	-	na	6.3E-03	-	na	5.4E-04	5.4E-04	-	na	6.3E-04	6.3E-04	6.3E-04
Benzo (a) anthracene ^c	0	-	-	na	4.9E-01	-	na	5.7E-01	-	na	4.9E-02	4.9E-02	-	na	5.7E-02	5.7E-02	5.7E-02
Benzo (b) fluoranthene ^c	0	-	-	na	4.9E-01	-	na	5.7E-01	-	na	4.9E-02	4.9E-02	-	na	5.7E-02	5.7E-02	5.7E-02
Benzo (k) fluoranthene ^c	0	-	-	na	4.9E-01	-	na	5.7E-01	-	na	4.9E-02	4.9E-02	-	na	5.7E-02	5.7E-02	5.7E-02
Benzo (a) pyrene ^c	0	-	-	na	4.9E-01	-	na	5.7E-01	-	na	4.9E-02	4.9E-02	-	na	5.7E-02	5.7E-02	5.7E-02
Bis(2-Chloroethyl) Ether	0	-	-	na	1.4E+01	-	na	1.5E+01	-	na	1.4E+00	1.4E+00	-	na	1.5E+00	1.5E+00	1.5E+00
Bis(2-Chloroisopropyl) Ether	0	-	-	na	1.7E+05	-	na	1.8E+05	-	na	1.7E+04	1.7E+04	-	na	1.8E+04	1.8E+04	1.8E+04
Bromofom ^c	0	-	-	na	3.6E+03	-	na	4.2E+03	-	na	3.6E+02	3.6E+02	-	na	4.2E+02	4.2E+02	4.2E+02
Butylbenzylphthalate	0	-	-	na	5.2E+03	-	na	5.5E+03	-	na	5.2E+02	5.2E+02	-	na	5.5E+02	5.5E+02	5.5E+02
Cadmium	0	2.5E+00	8.4E-01	na	-	2.6E+00	8.7E-01	-	6.4E-01	2.1E-01	-	-	6.6E-01	2.2E-01	-	-	2.2E-01
Carbon Tetrachloride ^c	0	-	-	na	4.4E+01	-	na	5.1E+01	-	na	4.4E+00	4.4E+00	-	na	5.1E+00	5.1E+00	5.1E+00
Chlordane ^c	0	2.4E+00	4.3E-03	na	2.2E-02	2.5E+00	4.5E-03	2.6E-02	6.0E-01	1.1E-03	2.2E-03	2.6E-03	6.2E-01	1.1E-03	2.6E-03	2.6E-03	
Chloride	0	8.6E+05	2.3E+05	na	-	8.8E+05	2.4E+05	-	2.2E+05	5.8E+04	-	-	2.2E+05	6.0E+04	-	-	6.0E+04
TRC	0	1.9E+01	1.1E+01	na	-	2.0E+01	1.1E+01	-	4.8E+00	2.8E+00	-	-	4.9E+00	2.8E+00	-	-	2.8E+00
Chlorobenzene	0	-	-	na	2.1E+04	-	na	2.2E+04	-	na	2.1E+03	2.2E+03	-	na	2.2E+03	2.2E+03	2.2E+03

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane ^c	0	--	--	na	4.0E+02	--	--	na	3.4E+01	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	na	4.0E+01
Chloroform ^c	0	--	--	na	3.4E+04	--	--	na	2.9E+03	--	--	na	2.9E+03	--	--	na	3.4E+03	--	--	na	3.4E+03
2-Chloronaphthalene	0	--	--	na	4.3E+03	--	--	na	4.3E+02	--	--	na	4.3E+02	--	--	na	4.5E+02	--	--	na	4.5E+02
2-Chlorophenol	0	--	--	na	4.0E+02	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	na	4.2E+01	--	--	na	4.2E+01
Chlorpyrifos	0	8.3E-02	4.1E-02	na	8.5E-02	4.2E-02	na	2.1E-02	1.0E-02	2.1E-02	1.1E-02	na	2.1E-02	1.1E-02	1.1E-02	na	2.1E-02	1.1E-02	1.1E-02	na	2.1E-02
Chromium III	0	4.2E+02	5.4E+01	na	4.3E+02	5.6E+01	na	1.0E+02	1.4E+01	1.0E+02	1.4E+01	na	1.1E+02	1.4E+01	1.1E+02	na	1.1E+02	1.4E+01	1.1E+02	na	1.1E+02
Chromium VI	0	1.6E+01	1.1E+01	na	1.6E+01	1.1E+01	na	4.0E+00	2.8E+00	4.0E+00	2.8E+00	na	4.1E+00	2.8E+00	4.1E+00	na	4.1E+00	2.8E+00	4.1E+00	na	4.1E+00
Chromium, Total	0	--	--	na	--	--	na	--	--	--	--	na	--	--	--	na	--	--	--	na	--
Chrysene ^c	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	na	4.9E-02	--	--	na	5.7E-02	--	--	na	5.7E-02
Copper	0	9.4E+00	6.5E+00	na	9.6E+00	6.7E+00	na	2.3E+00	1.6E+00	2.3E+00	1.6E+00	na	2.4E+00	1.7E+00	2.4E+00	na	2.4E+00	1.7E+00	2.4E+00	na	2.4E+00
Cyanide	0	2.2E+01	5.2E+00	na	2.3E+01	5.4E+00	na	5.5E+00	1.3E+00	5.5E+00	1.3E+00	na	5.7E+00	1.3E+00	5.7E+00	na	5.7E+00	1.3E+00	5.7E+00	na	5.7E+00
DDD ^c	0	--	--	na	8.4E-03	--	--	na	8.4E-04	--	--	na	8.4E-04	--	--	na	9.8E-04	--	--	na	9.8E-04
DDE ^c	0	--	--	na	5.9E-03	--	--	na	5.9E-04	--	--	na	5.9E-04	--	--	na	6.9E-04	--	--	na	6.9E-04
DDT ^c	0	1.1E+00	1.0E-03	na	1.1E+00	1.0E-03	na	2.9E-01	2.5E-04	2.9E-01	2.5E-04	na	2.8E-01	2.6E-04	2.8E-01	na	2.8E-01	2.6E-04	2.8E-01	na	2.8E-01
Demeton	0	--	--	na	1.0E-01	--	--	na	1.0E-01	--	--	na	2.6E-02	--	--	na	2.6E-02	--	--	na	2.6E-02
Dibenz(a,h)anthracene ^c	0	--	--	na	4.9E-01	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	na	5.7E-02	--	--	na	5.7E-02
Dibutyl phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+03	--	--	na	1.2E+03	--	--	na	1.3E+03	--	--	na	1.3E+03
Dichloromethane	0	--	--	na	1.9E+04	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	na	1.9E+03
(Methylene Chloride) ^c	0	--	--	na	1.7E+04	--	--	na	1.7E+03	--	--	na	1.7E+03	--	--	na	1.8E+03	--	--	na	1.8E+03
1,2-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+02	--	--	na	2.6E+02	--	--	na	2.7E+02	--	--	na	2.7E+02
1,3-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+02	--	--	na	2.6E+02	--	--	na	2.7E+02	--	--	na	2.7E+02
1,4-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+02	--	--	na	2.6E+02	--	--	na	2.7E+02	--	--	na	2.7E+02
3,3-Dichlorobenzidide ^c	0	--	--	na	7.7E-01	--	--	na	7.7E-02	--	--	na	7.7E-02	--	--	na	9.0E-02	--	--	na	9.0E-02
Dichlorobromomethane ^c	0	--	--	na	4.6E+02	--	--	na	4.6E+01	--	--	na	4.6E+01	--	--	na	5.4E+01	--	--	na	5.4E+01
1,2-Dichloroethane ^c	0	--	--	na	9.9E+02	--	--	na	9.9E+01	--	--	na	9.9E+01	--	--	na	1.2E+02	--	--	na	1.2E+02
1,1-Dichloroethylene	0	--	--	na	1.7E+04	--	--	na	1.7E+03	--	--	na	1.7E+03	--	--	na	1.8E+03	--	--	na	1.8E+03
1,2-trans-dichloroethylene	0	--	--	na	1.4E+05	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	na	1.5E+04	--	--	na	1.5E+04
2,4-Dichlorophenol	0	--	--	na	7.9E+02	--	--	na	7.9E+01	--	--	na	7.9E+01	--	--	na	8.3E+01	--	--	na	8.3E+01
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	na	--	--	--	--	na	--	--	--	na	--	--	--	na	--
1,2-Dichloropropane ^c	0	--	--	na	3.9E+02	--	--	na	3.9E+01	--	--	na	3.9E+01	--	--	na	4.5E+01	--	--	na	4.5E+01
1,3-Dichloropropene	0	--	--	na	1.7E+03	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	na	1.8E+02	--	--	na	1.8E+02
Dieldrin ^c	0	2.4E-01	5.6E-02	na	1.4E-03	5.8E-02	na	6.0E-02	1.4E-02	6.0E-02	1.4E-02	na	6.2E-02	1.5E-02	6.2E-02	na	6.2E-02	1.5E-02	6.2E-02	na	6.2E-02
Diethyl Phthalate	0	--	--	na	1.2E+05	--	--	na	1.2E+04	--	--	na	1.2E+04	--	--	na	1.3E+04	--	--	na	1.3E+04
Di-2-Ethylhexyl Phthalate ^c	0	--	--	na	5.9E+01	--	--	na	5.9E+00	--	--	na	5.9E+00	--	--	na	6.9E+00	--	--	na	6.9E+00
2,4-Dimethylphenol	0	--	--	na	2.3E+03	--	--	na	2.3E+02	--	--	na	2.3E+02	--	--	na	2.4E+02	--	--	na	2.4E+02
Dimethyl Phthalate	0	--	--	na	2.9E+06	--	--	na	2.9E+05	--	--	na	2.9E+05	--	--	na	3.1E+05	--	--	na	3.1E+05
Di-n-Butyl Phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+03	--	--	na	1.2E+03	--	--	na	1.3E+03	--	--	na	1.3E+03
2,4-Dinitrophenol	0	--	--	na	1.4E+04	--	--	na	1.4E+03	--	--	na	1.4E+03	--	--	na	1.5E+03	--	--	na	1.5E+03
2-Methyl-4,6-Dinitrophenol	0	--	--	na	7.6E+02	--	--	na	7.6E+01	--	--	na	7.6E+01	--	--	na	8.1E+01	--	--	na	8.1E+01
2,4-Dinitrotoluene ^c	0	--	--	na	9.1E+01	--	--	na	9.1E+01	--	--	na	9.1E+01	--	--	na	1.1E+02	--	--	na	1.1E+02
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppq)	0	--	--	na	1.2E-06	--	--	na	1.2E-06	--	--	na	1.2E-07	--	--	na	1.8E-07	--	--	na	1.8E-07
1,2-Diphenylhydrazine ^c	0	--	--	na	5.4E+00	--	--	na	5.4E+00	--	--	na	5.4E+01	--	--	na	6.3E+01	--	--	na	6.3E+01
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	5.8E-02	na	5.5E-02	1.4E-02	5.5E-02	1.4E-02	na	5.7E-02	1.5E-02	5.7E-02	na	5.7E-02	1.5E-02	5.7E-02	na	5.7E-02
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	5.8E-02	na	5.5E-02	1.4E-02	5.5E-02	1.4E-02	na	5.7E-02	1.5E-02	5.7E-02	na	5.7E-02	1.5E-02	5.7E-02	na	5.7E-02
Endosulfan Sulfate	0	--	--	na	2.4E+02	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	na	2.5E+01	--	--	na	2.5E+01
Endrin	0	8.6E-02	3.6E-02	na	8.1E-01	3.7E-02	na	2.2E-02	9.0E-03	2.2E-02	9.0E-03	na	2.2E-02	9.3E-03	2.2E-02	na	2.2E-02	9.3E-03	2.2E-02	na	2.2E-02
Endrin Aldehyde	0	--	--	na	8.1E-01	--	--	na	8.1E-01	--	--	na	8.1E-02	--	--	na	8.5E-02	--	--	na	8.5E-02

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations							
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH				
Ethylbenzene	0			na	2.9E+04			na	3.1E+04			na	2.9E+03			na	3.1E+03			na	3.1E+03			na	3.1E+03
Fluoranthene	0			na	3.7E+02			na	3.9E+02			na	3.7E+01			na	3.9E+01			na	3.9E+01			na	3.9E+01
Fluorene	0			na	1.4E+04			na	1.5E+04			na	1.4E+03			na	1.5E+03			na	1.5E+03			na	1.5E+03
Foaming Agents	0			na				na				na				na				na				na	
Guthion	0			1.0E-02				na				na	2.5E-03			na	2.6E-03			na	2.6E-03			na	2.6E-03
Heptachlor ^c	0			3.8E-03	2.1E-03			na	2.4E-03			na	2.1E-04			na	2.4E-04			na	2.4E-04			na	2.4E-04
Heptachlor Epoxide ^f	0			3.8E-03	1.1E-03			na	1.3E-03			na	1.1E-04			na	1.3E-04			na	1.3E-04			na	1.3E-04
Hexachlorobenzene ^g	0				7.7E-03			na	9.0E-03			na	7.7E-04			na	9.0E-04			na	9.0E-04			na	9.0E-04
Hexachlorobutadiene ^g	0				5.0E+02			na	5.8E+02			na	5.0E+01			na	5.8E+01			na	5.8E+01			na	5.8E+01
Hexachlorocyclohexane	0				1.3E-01			na	1.5E-01			na	1.3E-02			na	1.5E-02			na	1.5E-02			na	1.5E-02
Hexachlorocyclohexane Beta-BHC ^c	0				4.6E-01			na	5.4E-01			na	4.6E-02			na	5.4E-02			na	5.4E-02			na	5.4E-02
Hexachlorocyclohexane Gamma-BHC ^c (Lindane)	0			9.5E-01	6.9E-01			na	7.3E-01			na	6.3E-02			na	7.3E-02			na	7.3E-02			na	7.3E-02
Hexachlorocyclopentadiene	0				1.7E+04			na	1.8E+04			na	1.7E+03			na	1.8E+03			na	1.8E+03			na	1.8E+03
Hexachloroethane ^f	0				8.9E+01			na	1.0E+02			na	8.9E+00			na	1.0E+01			na	1.0E+01			na	1.0E+01
Hydrogen Sulfide	0			2.0E+00				na	2.1E+00			na	5.0E-01			na	5.2E-01			na	5.2E-01			na	5.2E-01
Indeno (1,2,3-cd) pyrene ^c	0				4.9E-01			na	5.7E-01			na	4.9E-02			na	5.7E-02			na	5.7E-02			na	5.7E-02
Iron	0							na				na				na				na				na	
Isophorone ^f	0				2.6E+04			na	3.0E+04			na	2.6E+03			na	3.0E+03			na	3.0E+03			na	3.0E+03
Kepon	0			0.0E+00				na	0.0E+00			na	0.0E+00			na	0.0E+00			na	0.0E+00			na	0.0E+00
Lead	0			7.3E+01	8.3E+00			na	7.5E+01			na	1.8E+01			na	2.1E+00			na	2.1E+00			na	2.1E+00
Malathion	0				1.0E-01			na	1.0E-01			na	2.5E-02			na	2.6E-02			na	2.6E-02			na	2.6E-02
Manganese	0							na				na				na				na				na	
Mercury	0			1.4E+00	7.7E-01			na	5.1E-02			na	3.5E-01			na	1.9E-01			na	2.0E-01			na	2.0E-01
Methyl Bromide	0				4.0E+03			na	4.2E+03			na	4.0E+02			na	4.2E+02			na	4.2E+02			na	4.2E+02
Methoxychlor	0			3.0E-02				na	3.1E-02			na	7.5E-03			na	7.8E-03			na	7.8E-03			na	7.8E-03
Mirex	0			0.0E+00				na	0.0E+00			na	0.0E+00			na	0.0E+00			na	0.0E+00			na	0.0E+00
Monochlorobenzene	0				2.1E+04			na	2.2E+04			na	2.1E+03			na	2.2E+03			na	2.2E+03			na	2.2E+03
Nickel	0			1.3E+02	1.5E+01			na	4.6E+03			na	3.3E+01			na	4.8E+02			na	4.8E+02			na	4.8E+02
Nitrate (as N)	0							na				na				na				na				na	
Nitrobenzene	0				1.9E+03			na	2.0E+03			na	1.9E+02			na	2.0E+02			na	2.0E+02			na	2.0E+02
N-Nitrosodimethylamine ^g	0				8.1E+01			na	9.4E+01			na	8.1E+00			na	9.4E+00			na	9.4E+00			na	9.4E+00
N-Nitrosodiphenylamine ^g	0				1.6E+02			na	1.9E+02			na	1.6E+01			na	1.9E+01			na	1.9E+01			na	1.9E+01
N-Nitrosodi-n-propylamine ^g	0				1.4E+01			na	1.6E+01			na	1.4E+00			na	1.6E+00			na	1.6E+00			na	1.6E+00
Parathion	0			6.5E-02	1.3E-02			na	1.3E-02			na	1.6E-02			na	1.7E-02			na	1.7E-02			na	1.7E-02
PCB-1016	0				1.4E-02			na	1.5E-02			na	3.5E-03			na	3.6E-03			na	3.6E-03			na	3.6E-03
PCB-1221	0				1.4E-02			na	1.5E-02			na	3.5E-03			na	3.6E-03			na	3.6E-03			na	3.6E-03
PCB-1232	0				1.4E-02			na	1.5E-02			na	3.5E-03			na	3.6E-03			na	3.6E-03			na	3.6E-03
PCB-1242	0				1.4E-02			na	1.5E-02			na	3.5E-03			na	3.6E-03			na	3.6E-03			na	3.6E-03
PCB-1248	0				1.4E-02			na	1.5E-02			na	3.5E-03			na	3.6E-03			na	3.6E-03			na	3.6E-03
PCB-1254	0				1.4E-02			na	1.5E-02			na	3.5E-03			na	3.6E-03			na	3.6E-03			na	3.6E-03
PCB-1260	0				1.4E-02			na	1.5E-02			na	3.5E-03			na	3.6E-03			na	3.6E-03			na	3.6E-03
PCB Total ^f	0				1.7E-03			na	2.0E-03			na	1.7E-04			na	2.0E-04			na	2.0E-04			na	2.0E-04

Parameter (ug/l unless noted) ^c	Background		Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Pentachlorophenol ^c	0	1.2E+01	9.0E+00	na	6.2E+01	9.5E+01	na	8.2E+00	9.5E+00	3.0E+00	2.3E+00	na	9.5E+00	3.0E+00	2.3E+00	na	9.5E+00
Phenol	0	-	-	na	4.6E+06	4.8E+06	na	4.6E+05	4.8E+05	-	-	na	4.8E+05	-	-	na	4.8E+05
Pyrene	0	-	-	na	1.1E+04	1.2E+04	na	1.1E+03	1.2E+03	-	-	na	1.2E+03	-	-	na	1.2E+03
Radionuclides (pCi/l except Beta/Pholon)	0	-	-	na	-	-	na	-	-	-	-	na	-	-	-	na	-
Gross Alpha Activity Beta and Pholon Activity (mrem/yr)	0	-	-	na	1.5E+01	1.6E+01	na	1.5E+00	1.6E+00	-	-	na	1.6E+00	-	-	na	1.6E+00
Strontium-90	0	-	-	na	4.0E+00	4.2E+00	na	4.0E-01	4.2E-01	-	-	na	4.2E-01	-	-	na	4.2E-01
Tritium	0	-	-	na	8.0E+00	8.4E+00	na	8.0E-01	8.4E-01	-	-	na	8.4E-01	-	-	na	8.4E-01
Selenium	0	2.0E+01	5.0E+00	na	1.1E+04	1.2E+04	na	2.0E+03	2.1E+03	-	-	na	2.1E+03	-	-	na	2.1E+03
Silver	0	1.8E+00	-	na	1.2E+04	1.2E+04	na	1.1E+03	1.2E+03	5.0E+00	1.3E+00	na	1.2E+03	5.1E+00	1.3E+00	na	1.2E+03
Sulfate	0	-	-	na	-	-	na	-	-	4.5E-01	-	na	-	4.6E-01	-	na	-
1,1,2,2-Tetrachloroethane ^g	0	-	-	na	1.1E+02	1.3E+02	na	1.1E+01	1.3E+01	-	-	na	1.3E+01	-	-	na	1.3E+01
Tetrachloroethylene ^g	0	-	-	na	8.9E+01	1.0E+02	na	8.9E+00	1.0E+01	-	-	na	1.0E+01	-	-	na	1.0E+01
Thallium	0	-	-	na	6.3E+00	6.6E+00	na	6.3E-01	6.6E-01	-	-	na	6.6E-01	-	-	na	6.6E-01
Toluene	0	-	-	na	2.0E+05	2.1E+05	na	2.0E+04	2.1E+04	-	-	na	2.1E+04	-	-	na	2.1E+04
Total dissolved solids	0	-	-	na	-	-	na	-	-	-	-	na	-	-	-	na	-
Toxaphene ^c	0	7.3E-01	2.0E-04	na	7.5E-03	8.7E-03	na	7.5E-04	8.7E-04	1.8E-01	5.0E-05	na	8.7E-04	1.9E-01	5.2E-05	na	8.7E-04
Tributyltin	0	4.6E-01	6.3E-02	na	-	-	na	-	-	1.2E-01	1.6E-02	na	-	1.2E-01	1.6E-02	na	-
1,2,4-Trichlorobenzene	0	-	-	na	9.4E+02	9.9E+02	na	9.4E+01	9.9E+01	-	-	na	9.9E+01	-	-	na	9.9E+01
1,1,2-Trichloroethane ^g	0	-	-	na	4.2E+02	4.9E+02	na	4.2E+01	4.9E+01	-	-	na	4.9E+01	-	-	na	4.9E+01
Trichloroethylene ^c	0	-	-	na	8.1E+02	9.4E+02	na	8.1E+01	9.4E+01	-	-	na	9.4E+01	-	-	na	9.4E+01
2,4,6-Trichlorophenol ^c	0	-	-	na	6.5E+01	7.6E+01	na	6.5E+00	7.6E+00	-	-	na	7.6E+00	-	-	na	7.6E+00
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	-	-	na	-	-	na	-	-	-	-	na	-	-	-	na	-
Vinyl Chloride ^d	0	-	-	na	6.1E+01	7.1E+01	na	6.1E+00	7.1E+00	-	-	na	7.1E+00	-	-	na	7.1E+00
Zinc	0	8.5E+01	8.5E+01	na	6.9E+04	7.3E+04	na	6.9E+03	7.3E+03	2.1E+01	2.1E+01	na	7.3E+03	2.2E+01	2.2E+01	na	7.3E+03

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Metal	Target Value (SSTV)
Antimony	4.5E+02
Arsenic	2.3E+01
Barium	na
Cadmium	1.3E-01
Chromium III	8.4E+00
Chromium VI	1.6E+00
Copper	9.6E-01
Iron	na
Lead	1.3E+00
Manganese	na
Mercury	5.4E-03
Nickel	2.3E+00
Selenium	7.8E-01
Silver	1.8E-01
Zinc	8.7E+00

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 2C maximum for industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
- Antidegradation WLAs are based upon a complete mix. = (0.1(WQC - background conc.) + background conc.) for acute and chronic
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: APCO Glen Lyn - Outfall 006

Permit No.: VA0000370

Receiving Stream: Adair Run

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		Stream Flows		Mixing Information		Effluent Information	
Mean Hardness (as CaCO3) =	68.2 mg/L	1Q10 (Annual) =	0.34 MGD	Annual - 1Q10 Mix =	100 %	Mean Hardness (as CaCO3) =	68.2 mg/L
90% Temperature (Annual) =	25.4 deg C	7Q10 (Annual) =	0.42 MGD	- 7Q10 Mix =	100 %	90% Temp (Annual) =	25.4 deg C
90% Temperature (Wet season) =	deg C	3Q10 (Annual) =	0.54 MGD	- 3Q10 Mix =	100 %	90% Temp (Wet season) =	deg C
90% Maximum pH =	8.62 SU	1Q10 (Wet season) =	0.58 MGD	Wet Season - 1Q10 Mix =	100 %	90% Maximum pH =	8.62 SU
10% Maximum pH =	7.29 SU	3Q10 (Wet season) =	1.2 MGD	- 3Q10 Mix =	100 %	10% Maximum pH =	7.29 SU
Tier Designation (1 or 2) =	2	3Q10 (Wet season) =	0.62 MGD			Discharge Flow =	2.8 MGD
Public Water Supply (PWS) Y/N? =	n	Harmonic Mean =	1.9 MGD				
Trout Present Y/N? =	n	Annual Average =	5.97 MGD				
Early Life Stages Present Y/N? =	y						

Parameter (ug/l unless noted)	Background Conc.		Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	
Acenaphthene	0	--	na	2.7E+03	--	na	3.3E+03	na	2.7E+02	--	na	3.3E+02	--	na	3.3E+02	3.3E+02	
Acrolein	0	--	na	7.8E+02	--	na	9.5E+02	na	7.8E+01	--	na	9.5E+01	--	na	9.5E+01	9.5E+01	
Acrylonitrile	0	--	na	6.6E+00	--	na	1.1E+01	na	6.6E+01	--	na	1.1E+00	--	na	1.1E+00	1.1E+00	
Aldrin	0	3.0E+00	na	1.4E-03	--	na	2.4E-03	na	1.4E-04	--	na	1.4E-04	--	na	2.4E-04	2.4E-04	
Ammonia-N (mg/l)	0	2.55E+00	4.41E-01	na	--	na	5.3E-01	na	6.38E-01	1.10E-01	na	1.3E-01	7.2E-01	1.3E-01	na	na	
Ammonia-N (mg/l) (High Flow)	0	2.55E+00	8.89E-01	na	--	na	1.3E+00	na	6.38E-01	2.22E-01	na	3.2E-01	7.7E-01	3.2E-01	na	na	
Anthracene	0	--	na	1.1E+05	--	na	1.3E+05	na	1.1E+04	--	na	1.3E+04	--	na	1.3E+04	1.3E+04	
Antimony	0	--	na	4.3E+03	--	na	5.3E+03	na	4.3E+02	--	na	5.3E+02	--	na	5.3E+02	5.3E+02	
Arsenic	0	3.4E+02	1.5E+02	na	--	na	1.7E+02	na	8.5E+01	3.8E+01	na	4.3E+01	9.5E+01	4.3E+01	na	na	
Barium	0	--	na	7.1E+02	--	na	7.1E+02	na	7.1E+01	--	na	7.1E+01	--	na	7.1E+01	7.1E+01	
Benzene	0	--	na	5.4E-03	--	na	9.1E-03	na	5.4E-04	--	na	9.1E-04	--	na	9.1E-04	9.1E-04	
Benzidine	0	--	na	4.9E-01	--	na	8.2E-01	na	4.9E-02	--	na	8.2E-02	--	na	8.2E-02	8.2E-02	
Benzo (a) anthracene	0	--	na	4.9E-01	--	na	8.2E-01	na	4.9E-02	--	na	8.2E-02	--	na	8.2E-02	8.2E-02	
Benzo (b) fluoranthene	0	--	na	4.9E-01	--	na	8.2E-01	na	4.9E-02	--	na	8.2E-02	--	na	8.2E-02	8.2E-02	
Benzo (k) fluoranthene	0	--	na	4.9E-01	--	na	8.2E-01	na	4.9E-02	--	na	8.2E-02	--	na	8.2E-02	8.2E-02	
Benzo (a) pyrene	0	--	na	1.4E+01	--	na	1.7E+01	na	1.4E+00	--	na	1.7E+00	--	na	1.7E+00	1.7E+00	
Bis(2-Chloroethyl) Ether	0	--	na	1.7E+05	--	na	2.1E+05	na	1.7E+04	--	na	2.1E+04	--	na	2.1E+04	2.1E+04	
Bis(2-Chloroisopropyl) Ether	0	--	na	3.6E+03	--	na	6.0E+03	na	3.6E+02	--	na	6.0E+02	--	na	6.0E+02	6.0E+02	
Bromoform	0	--	na	5.2E+03	--	na	6.4E+03	na	5.2E+02	--	na	6.4E+02	--	na	6.4E+02	6.4E+02	
Butylbenzylphthalate	0	2.9E+00	8.4E-01	na	--	na	9.7E-01	na	6.4E-01	2.1E-01	na	2.4E-01	7.1E-01	2.4E-01	na	na	
Cadmium	0	--	na	4.4E+01	--	na	7.4E+01	na	4.4E+00	--	na	7.4E+00	--	na	7.4E+00	7.4E+00	
Carbon Tetrachloride	0	2.4E+00	4.3E-03	na	2.2E-02	na	3.7E-02	na	6.0E-01	1.1E-03	na	1.2E-03	6.7E-01	1.2E-03	na	3.7E-03	
Chlordane	0	8.6E+05	2.3E+05	na	--	na	2.6E+05	na	2.2E+05	5.8E+04	na	6.8E+04	2.4E+05	6.6E+04	na	na	
Chloride	0	1.9E+01	1.1E+01	na	--	na	1.3E+01	na	4.8E+00	2.8E+00	na	3.2E+00	5.3E+00	3.2E+00	na	na	
TRC	0	--	na	2.1E+04	--	na	2.6E+04	na	2.1E+03	--	na	2.6E+03	--	na	2.6E+03	2.6E+03	
Chlorobenzene	0	--	na	2.1E+04	--	na	2.6E+04	na	2.1E+03	--	na	2.6E+03	--	na	2.6E+03	2.6E+03	

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wastebad Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane ^g	0	--	--	na	5.7E+02	--	--	na	3.4E+01	--	--	na	5.7E+01	--	--	na	5.7E+01	--	--	na	5.7E+01
Chloroform ^c	0	--	--	na	4.9E+04	--	--	na	2.9E+03	--	--	na	4.9E+03	--	--	na	4.9E+03	--	--	na	4.9E+03
2-Chloronaphthalene	0	--	--	na	5.3E+03	--	--	na	4.3E+02	--	--	na	5.3E+02	--	--	na	5.3E+02	--	--	na	5.3E+02
2-Chlorophenol	0	--	--	na	4.0E+02	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	na	4.0E+01
Chlorpyrifos	0	8.3E-02	4.1E-02	na	4.7E-02	9.3E-02	4.7E-02	na	2.1E-02	1.0E-02	1.0E-02	1.0E-02	2.3E-02	1.2E-02	1.2E-02	1.2E-02	2.3E-02	1.2E-02	1.2E-02	1.2E-02	1.2E-02
Chromium III	0	4.2E+02	5.4E+01	na	6.2E+01	4.7E+02	6.2E+01	na	1.0E+02	1.4E+01	1.4E+01	1.4E+01	1.2E+02	1.6E+01	1.6E+01	1.6E+01	1.2E+02	1.6E+01	1.6E+01	1.6E+01	1.6E+01
Chromium VI	0	1.8E+01	1.1E+01	na	1.3E+01	1.8E+01	1.3E+01	na	4.0E+00	2.8E+00	2.8E+00	4.5E+00	3.2E+00	3.2E+00	3.2E+00	3.2E+00	4.5E+00	3.2E+00	3.2E+00	3.2E+00	3.2E+00
Chromium, Total	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na	--	--	--	na	--
Chrysenes ^c	0	--	--	na	8.2E-01	--	--	na	4.9E-02	--	--	na	8.2E-02	--	--	na	8.2E-02	--	--	na	8.2E-02
Copper	0	9.4E+00	6.5E+00	na	7.4E+00	1.1E+01	7.4E+00	na	2.3E+00	1.6E+00	1.6E+00	2.6E+00	1.9E+00	1.9E+00	1.9E+00	2.6E+00	1.9E+00	1.9E+00	1.9E+00	1.9E+00	1.9E+00
Cyanide	0	2.2E+01	5.2E+00	na	6.0E+00	2.5E+01	6.0E+00	na	5.5E+00	1.3E+00	1.3E+00	6.2E+00	1.5E+00	1.5E+00	1.5E+00	6.2E+00	1.5E+00	1.5E+00	1.5E+00	1.5E+00	1.5E+00
DDD ^c	0	--	--	na	1.4E-02	--	--	na	8.4E-04	--	--	na	1.4E-03	--	--	na	1.4E-03	--	--	na	1.4E-03
DDE ^c	0	--	--	na	9.9E-03	--	--	na	5.9E-04	--	--	na	9.9E-04	--	--	na	9.9E-04	--	--	na	9.9E-04
DDT ^c	0	1.1E+00	1.0E-03	na	1.2E-03	1.2E+00	1.2E-03	na	2.8E-01	2.9E-04	2.9E-04	3.1E-01	2.9E-04	2.9E-04	2.9E-04	3.1E-01	2.9E-04	2.9E-04	2.9E-04	2.9E-04	2.9E-04
Demeton	0	--	--	na	1.2E-01	--	--	na	2.5E-02	--	--	na	2.9E-02	--	--	na	2.9E-02	--	--	na	2.9E-02
Dibenz(a,h)anthracene ^c	0	--	--	na	8.2E-01	--	--	na	4.9E-02	--	--	na	8.2E-02	--	--	na	8.2E-02	--	--	na	8.2E-02
Dibutyl phthalate	0	--	--	na	1.5E+04	--	--	na	1.2E+03	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	na	1.5E+03
Dichloromethane	0	--	--	na	1.6E+04	--	--	na	1.6E+03	--	--	na	2.7E+03	--	--	na	2.7E+03	--	--	na	2.7E+03
(Methylene Chloride) ^c	0	--	--	na	1.7E+04	--	--	na	1.7E+03	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	na	2.1E+03
1,2-Dichlorobenzene	0	--	--	na	3.2E+03	--	--	na	2.6E+02	--	--	na	3.2E+02	--	--	na	3.2E+02	--	--	na	3.2E+02
1,3-Dichlorobenzene	0	--	--	na	3.2E+03	--	--	na	2.6E+02	--	--	na	3.2E+02	--	--	na	3.2E+02	--	--	na	3.2E+02
1,4-Dichlorobenzene	0	--	--	na	3.2E+03	--	--	na	2.6E+02	--	--	na	3.2E+02	--	--	na	3.2E+02	--	--	na	3.2E+02
3,3-Dichlorobenzidine ^g	0	--	--	na	1.3E+00	--	--	na	7.7E-02	--	--	na	1.3E-01	--	--	na	1.3E-01	--	--	na	1.3E-01
Dichlorobromomethane ^c	0	--	--	na	4.6E+02	--	--	na	4.6E+01	--	--	na	7.7E+01	--	--	na	7.7E+01	--	--	na	7.7E+01
1,2-Dichloroethane ^c	0	--	--	na	9.9E+02	--	--	na	9.9E+01	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	na	1.7E+02
1,1-Dichloroethylene	0	--	--	na	1.7E+04	--	--	na	1.7E+03	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	na	2.1E+03
1,2-trans-dichloroethylene	0	--	--	na	1.4E+05	--	--	na	1.4E+04	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	na	1.7E+04
2,4-Dichlorophenol	0	--	--	na	7.9E+02	--	--	na	7.9E+01	--	--	na	9.6E+01	--	--	na	9.6E+01	--	--	na	9.6E+01
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	na	--	--	--	na	--
1,2-Dichloropropane ^g	0	--	--	na	3.9E+02	--	--	na	3.9E+01	--	--	na	6.5E+01	--	--	na	6.5E+01	--	--	na	6.5E+01
1,3-Dichloropropene	0	--	--	na	1.7E+03	--	--	na	1.7E+02	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	na	2.1E+02
Dieldrin ^c	0	2.4E-01	5.6E-02	na	1.4E-03	2.7E-01	6.4E-02	na	6.0E-02	1.4E-02	1.4E-02	6.7E-02	1.6E-02	1.6E-02	1.6E-02	6.7E-02	1.6E-02	1.6E-02	1.6E-02	1.6E-02	1.6E-02
Diethyl Phthalate	0	--	--	na	1.5E+05	--	--	na	1.2E+04	--	--	na	1.5E+04	--	--	na	1.5E+04	--	--	na	1.5E+04
Di-2-Ethylhexyl Phthalate ^c	0	--	--	na	9.9E+01	--	--	na	9.9E+00	--	--	na	9.9E+00	--	--	na	9.9E+00	--	--	na	9.9E+00
2,4-Dimethylphenol	0	--	--	na	2.8E+03	--	--	na	2.3E+02	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	na	2.8E+02
Dimethyl Phthalate	0	--	--	na	3.5E+06	--	--	na	2.9E+05	--	--	na	3.5E+05	--	--	na	3.5E+05	--	--	na	3.5E+05
Di-n-Butyl Phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+03	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	na	1.5E+03
2,4 Dinitrophenol	0	--	--	na	1.4E+04	--	--	na	1.4E+03	--	--	na	1.7E+03	--	--	na	1.7E+03	--	--	na	1.7E+03
2-Methyl-4,6-Dinitrophenol	0	--	--	na	7.65E+02	--	--	na	7.7E+01	--	--	na	9.3E+01	--	--	na	9.3E+01	--	--	na	9.3E+01
2,4-Dinitrotoluene ^c	0	--	--	na	1.5E+02	--	--	na	9.1E+00	--	--	na	1.5E+01	--	--	na	1.5E+01	--	--	na	1.5E+01
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppq)	0	--	--	na	1.2E-06	--	--	na	1.2E-07	--	--	na	3.8E-07	--	--	na	3.8E-07	--	--	na	3.8E-07
1,2-Diphenylhydrazine ^g	0	--	--	na	5.4E+00	--	--	na	5.4E-01	--	--	na	9.1E-01	--	--	na	9.1E-01	--	--	na	9.1E-01
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.5E-01	6.4E-02	na	5.5E-02	1.4E-02	1.4E-02	6.2E-02	1.6E-02	1.6E-02	1.6E-02	6.2E-02	1.6E-02	1.6E-02	1.6E-02	1.6E-02	1.6E-02
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.5E-01	6.4E-02	na	5.5E-02	1.4E-02	1.4E-02	6.2E-02	1.6E-02	1.6E-02	1.6E-02	6.2E-02	1.6E-02	1.6E-02	1.6E-02	1.6E-02	1.6E-02
Endosulfan Sulfate	0	--	--	na	2.4E+02	--	--	na	2.4E+01	--	--	na	2.9E+01	--	--	na	2.9E+01	--	--	na	2.9E+01
Endrin	0	8.6E-02	3.6E-02	na	8.1E-01	9.6E-02	4.1E-02	na	8.1E-02	9.0E-03	9.0E-03	2.4E-02	1.0E-02	1.0E-02	1.0E-02	2.4E-02	1.0E-02	1.0E-02	1.0E-02	1.0E-02	1.0E-02
Endrin Aldehyde	0	--	--	na	8.1E-01	--	--	na	8.1E-02	--	--	na	9.9E-02	--	--	na	9.9E-02	--	--	na	9.9E-02

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations							
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH				
Ethylbenzene	0	--	--	na	2.9E+04	--	--	na	3.5E+04	--	--	na	2.9E+03	--	--	na	3.5E+03	--	--	na	3.5E+03	--	--	na	3.5E+03
Fluoranthene	0	--	--	na	3.7E+02	--	--	na	4.5E+02	--	--	na	3.7E+01	--	--	na	4.5E+01	--	--	na	4.5E+01	--	--	na	4.5E+01
Fluorene	0	--	--	na	1.4E+04	--	--	na	1.7E+04	--	--	na	1.4E+03	--	--	na	1.7E+03	--	--	na	1.7E+03	--	--	na	1.7E+03
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Gulthion	0	--	1.0E-02	na	--	--	1.2E-02	na	--	--	2.5E-03	na	--	--	2.9E-03	na	--	--	2.9E-03	na	--	--	2.9E-03	na	--
Heptachlor ^c	0	5.2E-01	3.8E-03	na	2.1E-03	5.8E-01	4.4E-03	na	3.5E-03	1.3E-01	9.5E-04	na	2.1E-04	1.5E-01	1.1E-03	na	3.5E-04	1.5E-01	1.1E-03	na	3.5E-04	1.5E-01	1.1E-03	na	3.5E-04
Heptachlor Epoxid ^f	0	5.2E-01	3.8E-03	na	1.1E-03	5.8E-01	4.4E-03	na	1.8E-03	1.3E-01	9.5E-04	na	1.1E-04	1.5E-01	1.1E-03	na	1.8E-04	1.5E-01	1.1E-03	na	1.8E-04	1.5E-01	1.1E-03	na	1.8E-04
Hexachlorbenzen ^e	0	--	--	na	7.7E-03	--	--	na	1.3E-02	--	--	na	7.7E-04	--	--	na	1.3E-03	--	--	na	1.3E-03	--	--	na	1.3E-03
Hexachlorobutadien ^g	0	--	--	na	5.0E+02	--	--	na	8.4E+02	--	--	na	5.0E+01	--	--	na	8.4E+01	--	--	na	8.4E+01	--	--	na	8.4E+01
Hexachlorocyclohexane	0	--	--	na	1.3E-01	--	--	na	2.2E-01	--	--	na	1.3E-02	--	--	na	2.2E-02	--	--	na	2.2E-02	--	--	na	2.2E-02
Hexachlorocyclohexane Beta-BHC ^c	0	--	--	na	4.6E-01	--	--	na	7.7E-01	--	--	na	4.6E-02	--	--	na	7.7E-02	--	--	na	7.7E-02	--	--	na	7.7E-02
Hexachlorocyclohexane Gamma-BHC ^c (Lindane)	0	9.5E-01	na	na	6.3E-01	1.1E+00	--	na	1.1E+00	2.4E-01	--	na	6.3E-02	2.7E-01	--	na	1.1E-01	2.7E-01	--	na	1.1E-01	2.7E-01	--	na	1.1E-01
Hexachlorocyclopentadiene	0	--	--	na	1.7E+04	--	--	na	2.1E+04	--	--	na	1.7E+03	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	na	2.1E+03
Hexachloroethan ^g	0	--	--	na	8.9E+01	--	--	na	1.5E+02	--	--	na	8.9E+00	--	--	na	1.5E+01	--	--	na	1.5E+01	--	--	na	1.5E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.3E+00	na	--	--	5.0E-01	na	--	--	5.8E-01	na	--	--	5.8E-01	na	--	--	5.8E-01	na	--
Indeno (1,2,3-cd) pyrene ^c	0	--	--	na	4.9E-01	--	--	na	8.2E-01	--	--	na	4.9E-02	--	--	na	8.2E-02	--	--	na	8.2E-02	--	--	na	8.2E-02
Iron	0	--	--	na	2.6E+04	--	--	na	4.4E+04	--	--	na	2.6E+03	--	--	na	4.4E+03	--	--	na	4.4E+03	--	--	na	4.4E+03
Isophorone ^f	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--
Kepon ^e	0	7.3E+01	8.3E+00	na	--	8.2E+01	9.5E+00	na	--	1.8E+01	2.1E+00	na	--	2.0E+01	2.4E+00	na	--	2.0E+01	2.4E+00	na	--	2.0E+01	2.4E+00	na	--
Lead	0	--	1.0E-01	na	--	--	1.2E-01	na	--	--	2.5E-02	na	--	--	2.9E-02	na	--	--	2.9E-02	na	--	--	2.9E-02	na	--
Malathion	0	--	--	na	4.9E-01	--	--	na	8.2E-01	--	--	na	4.9E-02	--	--	na	8.2E-02	--	--	na	8.2E-02	--	--	na	8.2E-02
Manganese	0	--	--	na	2.6E+04	--	--	na	4.4E+04	--	--	na	2.6E+03	--	--	na	4.4E+03	--	--	na	4.4E+03	--	--	na	4.4E+03
Mercury	0	1.4E+00	7.7E-01	na	5.1E-02	1.6E+00	8.9E-01	na	6.2E-02	3.5E-01	1.9E-01	na	5.1E-03	3.9E-01	2.2E-01	na	6.2E-03	3.9E-01	2.2E-01	na	6.2E-03	3.9E-01	2.2E-01	na	6.2E-03
Methyl Bromide	0	--	--	na	4.0E+03	--	--	na	4.9E+03	--	--	na	4.0E+02	--	--	na	4.9E+02	--	--	na	4.9E+02	--	--	na	4.9E+02
Methoxychlor	0	--	3.0E-02	na	--	--	3.5E-02	na	--	--	7.5E-03	na	--	--	8.6E-03	na	--	--	8.6E-03	na	--	--	8.6E-03	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--
Monochlorobenzene	0	--	--	na	2.1E+04	--	--	na	2.6E+04	--	--	na	2.1E+03	--	--	na	2.6E+03	--	--	na	2.6E+03	--	--	na	2.6E+03
Nickel	0	1.3E+02	1.5E+01	na	4.6E+03	1.5E+02	1.7E+01	na	5.6E+03	3.3E+01	3.7E+00	na	4.6E+02	3.7E+01	4.2E+00	na	5.6E+02	3.7E+01	4.2E+00	na	5.6E+02	3.7E+01	4.2E+00	na	5.6E+02
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Nitrobenzene	0	--	--	na	1.9E+03	--	--	na	2.3E+03	--	--	na	1.9E+02	--	--	na	2.3E+02	--	--	na	2.3E+02	--	--	na	2.3E+02
N-Nitrosodimethylamin ^g	0	--	--	na	8.1E+01	--	--	na	1.4E+02	--	--	na	8.1E+00	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	na	1.4E+01
N-Nitrosodiphenylamin ^g	0	--	--	na	1.6E+02	--	--	na	2.7E+02	--	--	na	1.6E+01	--	--	na	2.7E+01	--	--	na	2.7E+01	--	--	na	2.7E+01
N-Nitrosodi-n-propylamin ^g	0	--	--	na	1.4E+01	--	--	na	2.4E+01	--	--	na	1.4E+00	--	--	na	2.4E+00	--	--	na	2.4E+00	--	--	na	2.4E+00
Parathion	0	6.5E-02	1.3E-02	na	--	7.3E-02	1.5E-02	na	--	1.6E-02	3.3E-03	na	--	1.8E-02	3.7E-03	na	--	1.8E-02	3.7E-03	na	--	1.8E-02	3.7E-03	na	--
PCB-1016	0	--	1.4E-02	na	--	--	1.6E-02	na	--	--	3.5E-03	na	--	--	4.0E-03	na	--	--	4.0E-03	na	--	--	4.0E-03	na	--
PCB-1221	0	--	1.4E-02	na	--	--	1.6E-02	na	--	--	3.5E-03	na	--	--	4.0E-03	na	--	--	4.0E-03	na	--	--	4.0E-03	na	--
PCB-1232	0	--	1.4E-02	na	--	--	1.6E-02	na	--	--	3.5E-03	na	--	--	4.0E-03	na	--	--	4.0E-03	na	--	--	4.0E-03	na	--
PCB-1242	0	--	1.4E-02	na	--	--	1.6E-02	na	--	--	3.5E-03	na	--	--	4.0E-03	na	--	--	4.0E-03	na	--	--	4.0E-03	na	--
PCB-1248	0	--	1.4E-02	na	--	--	1.6E-02	na	--	--	3.5E-03	na	--	--	4.0E-03	na	--	--	4.0E-03	na	--	--	4.0E-03	na	--
PCB-1254	0	--	1.4E-02	na	--	--	1.6E-02	na	--	--	3.5E-03	na	--	--	4.0E-03	na	--	--	4.0E-03	na	--	--	4.0E-03	na	--
PCB-1260	0	--	1.4E-02	na	--	--	1.6E-02	na	--	--	3.5E-03	na	--	--	4.0E-03	na	--	--	4.0E-03	na	--	--	4.0E-03	na	--
PCB Total ^f	0	--	--	na	1.7E-03	--	--	na	2.9E-03	--	--	na	1.7E-04	--	--	na	2.9E-04	--	--	na	2.9E-04	--	--	na	2.9E-04

Parameter (ug/l unless noted) c	Background Conc.		Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations							
	Acute	Chronic	HH (PWS)	HH	HH	Acute	Chronic	HH (PWS)	HH	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH				
Pentachlorophenol ^c	1.2E+01	9.0E+00	na	8.2E+01	1.4E+02	1.3E+01	1.0E+01	na	1.4E+02	8.2E+00	2.9E+00	2.2E+00	na	1.4E+01	3.3E+00	2.6E+00	na	1.4E+01	3.3E+00	2.6E+00	na	1.4E+01
Phenol	--	--	na	4.6E+06	5.6E+06	--	--	na	5.6E+06	4.6E+05	--	--	na	5.6E+05	--	--	na	5.6E+05	--	--	na	5.6E+05
Pyrene	--	--	na	1.1E+04	1.3E+04	--	--	na	1.3E+04	1.1E+03	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	na	1.3E+03
Radionuclides (pCi/l except Beta/Photon)	--	--	na	--	--	--	--	na	--	--	--	--	na	--	--	--	na	--	--	--	na	--
Gross Alpha Activity Beta and Photon Activity (mrem/yr)	--	--	na	1.5E+01	1.8E+01	--	--	na	1.8E+01	1.5E+00	--	--	na	1.8E+00	--	--	na	1.8E+00	--	--	na	1.8E+00
Strontium-90	--	--	na	4.0E+00	4.9E+00	--	--	na	4.9E+00	4.0E+01	--	--	na	4.9E+01	--	--	na	4.9E+01	--	--	na	4.9E+01
Tritium	--	--	na	8.0E+00	9.8E+00	--	--	na	9.8E+00	8.0E+01	--	--	na	9.8E+01	--	--	na	9.8E+01	--	--	na	9.8E+01
Selenium	2.0E+01	5.0E+00	na	2.0E+04	2.4E+04	2.2E+01	5.8E+00	na	1.3E+04	2.0E+03	5.0E+00	1.3E+00	na	1.3E+03	5.6E+00	1.4E+00	na	1.3E+03	5.6E+00	1.4E+00	na	1.3E+03
Silver	1.8E+00	--	na	--	--	2.0E+00	--	na	--	--	4.5E-01	--	na	--	5.0E-01	--	na	--	5.0E-01	--	na	--
Sulfate	--	--	na	--	--	--	--	na	--	--	--	--	na	--	--	--	na	--	--	--	na	--
1,1,2,2-Tetrachloroethane ^f	--	--	na	1.1E+02	1.8E+02	--	--	na	1.8E+02	1.1E+01	--	--	na	1.8E+01	--	--	na	1.8E+01	--	--	na	1.8E+01
Tetrachloroethylene ^f	--	--	na	8.9E+01	1.5E+02	--	--	na	1.5E+02	8.9E+00	--	--	na	1.5E+01	--	--	na	1.5E+01	--	--	na	1.5E+01
Thallium	--	--	na	6.3E+00	7.7E+00	--	--	na	7.7E+00	6.3E-01	--	--	na	7.7E-01	--	--	na	7.7E-01	--	--	na	7.7E-01
Toluene	--	--	na	2.0E+05	2.4E+05	--	--	na	2.4E+05	2.0E+04	--	--	na	2.4E+04	--	--	na	2.4E+04	--	--	na	2.4E+04
Total dissolved solids	--	--	na	--	--	--	--	na	--	--	--	--	na	--	--	--	na	--	--	--	na	--
Toxaphene ^c	7.3E-01	2.0E-04	na	7.5E-03	1.3E-02	8.2E-01	2.3E-04	na	1.3E-02	7.5E-04	1.8E-01	5.0E-05	na	1.3E-03	2.0E-01	5.8E-05	na	1.3E-03	2.0E-01	5.8E-05	na	1.3E-03
Tributyltin	4.6E-01	6.3E-02	na	--	--	5.2E-01	7.2E-02	na	--	--	1.2E-01	1.6E-02	na	--	1.3E-01	1.8E-02	na	--	1.3E-01	1.8E-02	na	--
1,2,4-Trichlorobenzene	--	--	na	9.4E+02	1.1E+03	--	--	na	1.1E+03	9.4E+01	--	--	na	1.1E+02	--	--	na	1.1E+02	--	--	na	1.1E+02
1,1,2-Trichloroethane ^f	--	--	na	4.2E+02	7.1E+02	--	--	na	7.1E+02	4.2E+01	--	--	na	7.1E+01	--	--	na	7.1E+01	--	--	na	7.1E+01
Trichloroethylene ^c	--	--	na	8.1E+02	1.4E+03	--	--	na	1.4E+03	8.1E+01	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	na	1.4E+02
2,4,6-Trichlorophenol ^c	--	--	na	6.5E+01	1.1E+02	--	--	na	1.1E+02	6.5E+00	--	--	na	1.1E+01	--	--	na	1.1E+01	--	--	na	1.1E+01
2-(2,4,5-Trichlorophenoxy)propionic acid (Silvex)	--	--	na	--	--	--	--	na	--	--	--	--	na	--	--	--	na	--	--	--	na	--
Vinyl Chloride ^f	--	--	na	6.1E+01	1.0E+02	--	--	na	1.0E+02	6.1E+00	--	--	na	1.0E+01	--	--	na	1.0E+01	--	--	na	1.0E+01
Zinc	8.5E+01	8.5E+01	na	6.9E+04	8.4E+04	9.5E+01	9.8E+01	na	8.4E+04	6.9E+03	2.1E+01	2.1E+01	na	8.4E+03	2.4E+01	2.5E+01	na	8.4E+03	2.4E+01	2.5E+01	na	8.4E+03

Metal	Target Value (SSTV)
Antimony	5.3E+02
Arsenic	2.6E+01
Barium	na
Cadmium	1.4E-01
Chromium III	9.3E+00
Chromium VI	1.8E+00
Copper	1.1E+00
Iron	na
Lead	1.4E+00
Manganese	na
Mercury	6.2E-03
Nickel	2.5E+00
Selenium	8.6E-01
Silver	2.0E-01
Zinc	9.5E+00

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 20 maximum for Industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
- Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic = (0.1(WQC - background conc.) + background conc.) for human health
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

FRESHWATER WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: APCO Glen Lyn - Outfall 007

Permit No.: VA0000370

Receiving Stream: New River

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information	Stream Flows	Mixing Information	Effluent Information
Mean Hardness (as CaCO3) =	1Q10 (Annual) = 360.77 MGD	Annual - 1Q10 Mix = 1.11 %	Mean Hardness (as CaCO3) = 68.2 mg/L
90% Temperature (Annual) =	7Q10 (Annual) = 449.75 MGD	- 7Q10 Mix = 64.77 %	90% Temp (Annual) = 25.4 deg C
90% Temperature (Wet season) =	30Q10 (Annual) = 573.17 MGD	- 30Q10 Mix = 80.61 %	90% Temp (Wet season) = deg C
90% Maximum pH =	1Q10 (Wet season) = 560.71 MGD	Wet Season - 1Q10 Mix = 1.65 %	90% Maximum pH = 8.62 SU
10% Maximum pH =	30Q10 (Wet season) = 1202.1 MGD	- 30Q10 Mix = 100 %	10% Maximum pH = 7.29 SU
Tier Designation (1 or 2) =	30Q5 = 665.15 MGD		Discharge Flow = 0.103 MGD
Public Water Supply (PWS) Y/N? =	Harmonic Mean = 1753.5 MGD		
Trout Present Y/N? =	Annual Average = 3041.4 MGD		
Early Life Stages Present Y/N? =			

Parameter (ug/l unless noted)	Background		Water Quality Criteria				Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
	Conc.		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenaphthene	0		--	--	na	2.7E+03	--	--	na	1.7E+07	--	--	na	1.7E+06	--	--	na	1.7E+06
Acrolein	0		--	--	na	7.8E+02	--	--	na	5.0E+06	--	--	na	5.0E+05	--	--	na	5.0E+05
Acrylonitrile ^f	0		--	--	na	6.6E+00	--	--	na	1.1E+05	--	--	na	1.1E+04	--	--	na	1.1E+04
Aldrin ^c	0		3.0E+00	--	na	1.4E-03	1.2E+02	--	na	2.4E+01	7.5E-01	--	na	2.4E+00	1.2E+02	--	na	2.4E+00
Ammonia-N (mg/l)	0		2.55E+00	4.41E-01	na	--	1.0E+02	2.0E+03	na	1.10E-01	6.38E-01	1.10E-01	na	6.1E+02	1.0E+02	6.1E+02	na	--
Ammonia-N (mg/l) (High Flow)	0		2.55E+00	8.89E-01	na	--	2.3E+02	1.0E+04	na	2.22E-01	6.38E-01	2.22E-01	na	2.6E+03	2.3E+02	2.6E+03	na	--
Anthracene	0		--	--	na	1.1E+05	--	--	na	7.1E+08	--	--	na	1.1E+04	--	--	na	7.1E+07
Antimony	0		--	--	na	4.3E+03	--	--	na	2.8E+07	--	--	na	4.3E+02	--	--	na	2.8E+06
Arsenic	0		3.4E+02	1.5E+02	na	--	1.4E+04	4.2E+05	na	3.8E+01	8.5E+01	3.8E+01	na	3.0E+05	1.4E+04	1.6E+05	na	--
Barium	0		--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Benzene ^c	0		--	--	na	7.1E+02	--	--	na	1.2E+07	--	--	na	7.1E+01	--	--	na	1.2E+06
Benzidine ^f	0		--	--	na	5.4E-03	--	--	na	9.2E+01	--	--	na	5.4E-04	--	--	na	9.2E+00
Benzo (a) anthracene ^c	0		--	--	na	4.9E-01	--	--	na	8.3E+03	--	--	na	8.3E+02	--	--	na	8.3E+02
Benzo (b) fluoranthene ^c	0		--	--	na	4.9E-01	--	--	na	8.3E+03	--	--	na	8.3E+02	--	--	na	8.3E+02
Benzo (k) fluoranthene ^c	0		--	--	na	4.9E-01	--	--	na	8.3E+03	--	--	na	8.3E+02	--	--	na	8.3E+02
Benzo (e) pyrene ^c	0		--	--	na	4.9E-01	--	--	na	8.3E+03	--	--	na	8.3E+02	--	--	na	8.3E+02
Bis(2-Chloroethyl) Ether	0		--	--	na	1.4E+01	--	--	na	9.0E+04	--	--	na	1.4E+00	--	--	na	9.0E+03
Bis(2-Chloroisopropyl) Ether	0		--	--	na	1.7E+05	--	--	na	1.1E+09	--	--	na	1.7E+04	--	--	na	1.1E+08
Bromoform ^c	0		--	--	na	3.6E+03	--	--	na	6.1E+07	--	--	na	3.6E+02	--	--	na	6.1E+06
Butylbenzylphthalate	0		--	--	na	5.2E+03	--	--	na	3.4E+07	--	--	na	5.2E+02	--	--	na	3.4E+06
Cadmium	0		2.5E+00	8.4E-01	na	--	1.0E+02	2.4E+03	na	2.1E-01	6.4E-01	2.1E-01	na	2.2E+03	1.0E+02	9.2E+02	na	--
Carbon Tetrachloride ^c	0		--	--	na	4.4E+01	--	--	na	7.5E+05	--	--	na	4.4E+00	--	--	na	7.5E+04
Chlordane ^c	0		2.4E+00	4.3E-03	na	2.2E-02	9.6E+01	1.2E+01	na	3.7E+02	6.0E-01	1.1E-03	na	2.1E+03	9.6E+01	4.7E+00	na	3.7E+01
Chloride	0		8.6E+05	2.3E+05	na	--	3.4E+07	6.5E+08	na	5.8E+04	2.2E+05	5.8E+04	na	7.5E+08	3.4E+07	2.5E+08	na	--
TRC	0		1.9E+01	1.1E+01	na	--	7.6E+02	3.1E+04	na	2.8E+00	4.8E+00	2.8E+00	na	1.7E+04	7.6E+02	1.2E+04	na	--
Chlorobenzene	0		--	--	na	2.1E+04	--	--	na	1.4E+08	--	--	na	2.1E+03	--	--	na	1.4E+07

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations								
		Acute		Chronic		HH (PWS)		HH		Acute		Chronic		HH (PWS)		HH		Acute		Chronic		HH (PWS)		HH		
Chlorodibromomethane ^g	0			na	3.4E+02	na	5.8E+06	na	3.4E+01	na	3.4E+01	na	5.8E+05	na	5.8E+05	na	5.8E+05	na	3.3E+00	4.5E+01	na	na	na	5.8E+05	na	5.8E+05
Chloroform ^c	0			na	2.9E+04	na	4.9E+08	na	2.9E+03	na	2.9E+03	na	4.9E+07	na	4.9E+07	na	4.9E+07	na	1.7E+04	5.9E+04	na	na	na	4.9E+07	na	4.9E+07
2-Chloronaphthalene	0			na	4.3E+03	na	2.8E+07	na	4.3E+02	na	4.3E+02	na	2.8E+06	na	2.8E+06	na	2.8E+06	na	1.7E+04	5.9E+04	na	na	na	2.8E+06	na	2.8E+06
2-Chlorophenol	0			na	4.0E+02	na	2.6E+06	na	4.0E+01	na	4.0E+01	na	2.6E+05	na	2.6E+05	na	2.6E+05	na	3.3E+00	4.5E+01	na	na	na	2.6E+05	na	2.6E+05
Chlorpyrifos	0			na	1.2E+02	na	3.3E+00	na	1.2E+02	na	1.2E+02	na	3.3E+00	na	3.3E+00	na	3.3E+00	na	1.7E+04	5.9E+04	na	na	na	3.3E+00	na	3.3E+00
Chromium III	0			na	1.5E+05	na	1.7E+04	na	1.5E+05	na	1.5E+05	na	1.7E+04	na	1.7E+04	na	1.7E+04	na	6.4E+02	1.2E+04	na	na	na	1.7E+04	na	1.7E+04
Chromium VI	0			na	3.1E+04	na	6.4E+02	na	3.1E+04	na	3.1E+04	na	6.4E+02	na	6.4E+02	na	6.4E+02	na	1.4E+04	1.2E+04	na	na	na	1.4E+04	na	1.4E+04
Chromium, Total	0			na		na		na		na		na		na		na		na			na	na	na		na	
Chrysenes ^c	0			na	4.9E-01	na	8.3E+03	na	4.9E-02	na	4.9E-02	na	8.3E+02	na	8.3E+02	na	8.3E+02	na			na	na	na	8.3E+02	na	8.3E+02
Copper	0			na	6.5E+00	na	3.7E+02	na	6.5E+00	na	6.5E+00	na	3.7E+02	na	3.7E+02	na	3.7E+02	na	2.3E+00	1.6E+00	na	na	na	2.3E+00	na	2.3E+00
Cyanide	0			na	5.2E+00	na	8.8E+02	na	5.2E+00	na	5.2E+00	na	8.8E+02	na	8.8E+02	na	8.8E+02	na	5.5E+00	1.3E+00	na	na	na	5.5E+00	na	5.5E+00
DDD ^c	0			na	8.4E-03	na	1.4E+02	na	8.4E-04	na	8.4E-04	na	1.4E+02	na	1.4E+02	na	1.4E+02	na			na	na	na	1.4E+02	na	1.4E+02
DDE ^c	0			na	5.9E-03	na	1.0E+02	na	5.9E-04	na	5.9E-04	na	1.0E+02	na	1.0E+02	na	1.0E+02	na			na	na	na	1.0E+02	na	1.0E+02
DDT ^c	0			na	5.9E-03	na	1.0E+02	na	5.9E-04	na	5.9E-04	na	1.0E+02	na	1.0E+02	na	1.0E+02	na	2.8E-01	2.5E-04	na	na	na	2.8E-01	na	2.8E-01
Demeton	0			na	1.0E-01	na	2.8E+02	na	1.0E-01	na	1.0E-01	na	2.8E+02	na	2.8E+02	na	2.8E+02	na			na	na	na		na	
Dibenz(a,h)anthracene ^c	0			na	4.9E-01	na	8.3E+03	na	4.9E-02	na	4.9E-02	na	8.3E+02	na	8.3E+02	na	8.3E+02	na			na	na	na		na	
Dibutyl phthalate	0			na	1.2E+04	na	7.8E+07	na	1.2E+04	na	1.2E+04	na	7.8E+06	na	7.8E+06	na	7.8E+06	na			na	na	na		na	
Dichloromethane	0			na	1.6E+04	na	2.7E+08	na	1.6E+03	na	1.6E+03	na	2.7E+07	na	2.7E+07	na	2.7E+07	na			na	na	na		na	
(Methylene Chloride) ^c	0			na	1.7E+04	na	1.1E+08	na	1.7E+03	na	1.7E+03	na	1.1E+07	na	1.1E+07	na	1.1E+07	na			na	na	na		na	
1,2-Dichlorobenzene	0			na	2.6E+03	na	1.7E+07	na	2.6E+02	na	2.6E+02	na	1.7E+06	na	1.7E+06	na	1.7E+06	na			na	na	na		na	
1,3-Dichlorobenzene	0			na	2.6E+03	na	1.7E+07	na	2.6E+02	na	2.6E+02	na	1.7E+06	na	1.7E+06	na	1.7E+06	na			na	na	na		na	
1,4-Dichlorobenzene	0			na	2.6E+03	na	1.7E+07	na	2.6E+02	na	2.6E+02	na	1.7E+06	na	1.7E+06	na	1.7E+06	na			na	na	na		na	
3,3-Dichlorobenzidine ^g	0			na	7.7E-01	na	1.3E+04	na	7.7E-02	na	7.7E-02	na	1.3E+03	na	1.3E+03	na	1.3E+03	na			na	na	na		na	
Dichlorobromomethane ^c	0			na	4.6E+02	na	7.8E+06	na	4.6E+01	na	4.6E+01	na	7.8E+05	na	7.8E+05	na	7.8E+05	na			na	na	na		na	
1,2-Dichloroethane ^c	0			na	9.9E+02	na	1.7E+07	na	9.9E+01	na	9.9E+01	na	1.7E+06	na	1.7E+06	na	1.7E+06	na			na	na	na		na	
1,1-Dichloroethylene	0			na	1.7E+04	na	1.1E+08	na	1.7E+03	na	1.7E+03	na	1.1E+07	na	1.1E+07	na	1.1E+07	na			na	na	na		na	
1,2-trans-dichloroethylene	0			na	1.4E+05	na	9.0E+08	na	1.4E+04	na	1.4E+04	na	9.0E+07	na	9.0E+07	na	9.0E+07	na			na	na	na		na	
2,4-Dichlorophenol	0			na	7.9E+02	na	5.1E+06	na	7.9E+01	na	7.9E+01	na	5.1E+05	na	5.1E+05	na	5.1E+05	na			na	na	na		na	
2,4-Dichlorophenoxy acetic acid (2,4-D)	0			na		na		na		na		na		na		na		na			na	na	na		na	
1,2-Dichloropropane ^g	0			na	3.9E+02	na	6.6E+06	na	3.9E+01	na	3.9E+01	na	6.6E+05	na	6.6E+05	na	6.6E+05	na			na	na	na		na	
1,3-Dichloropropene	0			na	1.7E+03	na	1.1E+07	na	1.7E+02	na	1.7E+02	na	1.1E+06	na	1.1E+06	na	1.1E+06	na			na	na	na		na	
Dieldrin ^c	0			na	5.6E-02	na	9.6E+00	na	5.6E-02	na	5.6E-02	na	9.6E+00	na	9.6E+00	na	9.6E+00	na			na	na	na		na	
Diethyl Phthalate	0			na	1.2E+05	na	7.8E+08	na	1.2E+04	na	1.2E+04	na	7.8E+07	na	7.8E+07	na	7.8E+07	na			na	na	na		na	
Di-n-Ethylhexyl Phthalate ^c	0			na	5.9E+01	na	1.0E+06	na	5.9E+00	na	5.9E+00	na	1.0E+05	na	1.0E+05	na	1.0E+05	na			na	na	na		na	
2,4-Dimethylphenol	0			na	2.9E+03	na	1.5E+07	na	2.9E+02	na	2.9E+02	na	1.5E+06	na	1.5E+06	na	1.5E+06	na			na	na	na		na	
Dimethyl Phthalate	0			na	2.9E+06	na	1.9E+10	na	2.9E+05	na	2.9E+05	na	1.9E+09	na	1.9E+09	na	1.9E+09	na			na	na	na		na	
Di-n-Butyl Phthalate	0			na	1.2E+04	na	7.8E+07	na	1.2E+03	na	1.2E+03	na	7.8E+06	na	7.8E+06	na	7.8E+06	na			na	na	na		na	
2,4-Dinitrophenol	0			na	1.4E+04	na	9.0E+07	na	1.4E+03	na	1.4E+03	na	9.0E+06	na	9.0E+06	na	9.0E+06	na			na	na	na		na	
2-Methyl-4,6-Dinitrophenol	0			na	7.65E+02	na	4.9E+06	na	7.65E+01	na	7.65E+01	na	4.9E+05	na	4.9E+05	na	4.9E+05	na			na	na	na		na	
2,4-Dinitrotoluene ^c	0			na	9.1E+01	na	1.5E+06	na	9.1E+00	na	9.1E+00	na	1.5E+05	na	1.5E+05	na	1.5E+05	na			na	na	na		na	
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppc)	0			na	1.2E-06	na		na	1.2E-07	na	1.2E-07	na		na		na				na	na	na		na		
1,2-Diphenylhydrazin ^g	0			na	5.4E+00	na	9.2E+04	na	5.4E-01	na	5.4E-01	na	9.2E+03	na	9.2E+03	na	9.2E+03	na			na	na	na		na	
Alpha-Endosulfan	0			na	2.4E+02	na	1.6E+06	na	2.4E+01	na	2.4E+01	na	1.6E+05	na	1.6E+05	na	1.6E+05	na			na	na	na		na	
Beta-Endosulfan	0			na	2.4E+02	na	1.6E+06	na	2.4E+01	na	2.4E+01	na	1.6E+05	na	1.6E+05	na	1.6E+05	na			na	na	na		na	
Endosulfan Sulfate	0			na	2.4E+02	na	1.6E+06	na	2.4E+01	na	2.4E+01	na	1.6E+05	na	1.6E+05	na	1.6E+05	na			na	na	na		na	
Endrin	0			na	8.6E-02	na	3.4E+00	na	8.6E-02	na	8.6E-02	na	3.4E+00	na	3.4E+00	na	3.4E+00	na			na	na	na		na	
Endrin Aldehyde	0			na	8.1E-01	na	5.2E+03	na	8.1E-01	na	8.1E-01	na	5.2E+02	na	5.2E+02	na	5.2E+02	na			na	na	na		na	
	0			na	8.1E-01	na	5.2E+03	na	8.1E-01	na	8.1E-01	na	5.2E+02	na	5.2E+02	na	5.2E+02	na			na	na	na		na	

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0			na	2.9E+04			na	1.9E+08			na	2.9E+03			na	1.9E+07			na	1.9E+07
Fluoranthene	0			na	3.7E+02			na	2.4E+06			na	3.7E+01			na	2.4E+05			na	2.4E+05
Fluorene	0			na	1.4E+04			na	9.0E+07			na	1.4E+03			na	9.0E+06			na	9.0E+06
Foaming Agents	0			na				na				na				na				na	
Guthion	0			1.0E-02				na	2.8E+01			na	2.5E-03			na	1.1E+01			na	1.1E+01
Heptachlor ^c	0			3.8E-03	2.1E-03			na	3.6E+01			na	2.1E-04			na	3.6E+00			na	3.6E+00
Heptachlor Epoxide ^f	0			3.8E-03	1.1E-03			na	1.9E+01			na	1.1E-04			na	1.9E+00			na	1.9E+00
Hexachlorobenzene ^g	0				7.7E-03			na	1.3E+02			na	7.7E-04			na	1.3E+01			na	1.3E+01
Hexachlorobutadiene ^g	0				5.0E+02			na	8.5E+06			na	5.0E+01			na	8.5E+05			na	8.5E+05
Hexachlorocyclohexane	0				1.3E-01			na	2.2E+03			na	1.3E-02			na	2.2E+02			na	2.2E+02
Hexachlorocyclohexene	0				4.8E-01			na	7.8E+03			na	4.8E-02			na	7.8E+02			na	7.8E+02
Beta-BHC ^c	0				6.3E-01			na	1.1E+04			na	6.3E-02			na	1.1E+03			na	1.1E+03
Gamma-BHC ^c (Lindane)	0			9.5E-01				na	1.1E+08			na	1.1E+06			na	1.1E+07			na	1.1E+07
Hexachlorocyclopentadiene	0				1.7E+04			na	1.5E+06			na	8.9E+00			na	1.5E+05			na	1.5E+05
Hexachloroethane ^g	0				8.9E+01			na	5.7E+03			na	5.0E-01			na	2.2E+03			na	2.2E+03
Hydrogen Sulfide	0			2.0E+00				na	8.3E+03			na	4.9E-02			na	8.3E+02			na	8.3E+02
Indeno (1,2,3-cd) pyrene ^c	0				2.6E+04			na	4.4E+08			na	2.6E+03			na	4.4E+07			na	4.4E+07
Iron	0							na				na				na				na	
Isophorone ^g	0			0.0E+00				na	0.0E+00			na	0.0E+00			na	0.0E+00			na	0.0E+00
Kepone	0			7.3E+01				na	2.9E+03			na	1.8E+01			na	6.4E+04			na	2.9E+03
Lead	0			1.0E-01				na	2.8E+02			na	2.5E-02			na	1.1E+02			na	1.1E+02
Malathion	0							na				na				na				na	
Manganese	0							na				na				na				na	
Mercury	0			1.4E+00	7.7E-01			na	5.1E-02			na	5.1E-03			na	1.2E+03			na	5.6E+01
Methyl Bromide	0				4.0E+03			na	2.6E+07			na	4.0E+02			na	2.6E+06			na	5.6E+01
Methoxychlor	0			3.0E-02				na	8.5E+01			na	7.5E-03			na	3.3E+01			na	3.3E+01
Mirex	0			0.0E+00				na	0.0E+00			na	0.0E+00			na	0.0E+00			na	0.0E+00
Monochlorobenzene	0				2.1E+04			na	1.4E+08			na	2.1E+03			na	1.4E+07			na	1.4E+07
Nickel	0			1.3E+02	1.5E+01			na	4.8E+03			na	4.8E+02			na	3.0E+06			na	5.3E+03
Nitrate (as N)	0							na				na				na				na	
Nitrobenzene	0				1.9E+03			na	1.2E+07			na	1.9E+02			na	1.2E+06			na	1.2E+06
N-Nitrosodimethylamine ^g	0				8.1E+01			na	1.4E+06			na	8.1E+00			na	1.4E+05			na	1.4E+05
N-Nitrosodiphenylamine ^g	0				1.6E+02			na	2.7E+06			na	1.6E+01			na	2.7E+05			na	2.7E+05
N-Nitrosodi-n-propylamine ^g	0				1.4E+01			na	2.4E+05			na	1.4E+00			na	2.4E+04			na	2.4E+04
Parathion	0			6.5E-02	1.3E-02			na	3.7E+01			na	1.6E-02			na	5.7E+01			na	1.4E+01
PCB-1016	0				1.4E-02			na	4.0E+01			na	3.5E-03			na	1.5E+01			na	1.5E+01
PCB-1221	0				1.4E-02			na	4.0E+01			na	3.5E-03			na	1.5E+01			na	1.5E+01
PCB-1232	0				1.4E-02			na	4.0E+01			na	3.5E-03			na	1.5E+01			na	1.5E+01
PCB-1242	0				1.4E-02			na	4.0E+01			na	3.5E-03			na	1.5E+01			na	1.5E+01
PCB-1248	0				1.4E-02			na	4.0E+01			na	3.5E-03			na	1.5E+01			na	1.5E+01
PCB-1254	0				1.4E-02			na	4.0E+01			na	3.5E-03			na	1.5E+01			na	1.5E+01
PCB-1260	0				1.4E-02			na	4.0E+01			na	3.5E-03			na	1.5E+01			na	1.5E+01
PCB Total ^f	0				1.7E-03			na	2.9E+01			na	1.7E-04			na	2.9E+00			na	2.9E+00

Parameter (ug/l unless noted) ^c	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	Acute	Chronic	HH (PWS)	
Pentachlorophenol ^c	0	1.2E+01	9.0E+00	na	4.7E+02	2.5E+04	na	1.4E+06	2.9E+00	2.2E+00	8.2E+00	1.0E+04	9.8E+03	1.4E+05	9.8E+03	na	1.4E+05
Phenol	0	--	--	na	--	--	na	3.0E+10	--	--	4.6E+05	--	--	3.0E+09	--	na	3.0E+09
Pyrene	0	--	--	na	--	--	na	7.1E+07	--	--	1.1E+03	--	--	7.1E+06	--	na	7.1E+06
Radionuclides (pCi/l except Beta/Photon)	0	--	--	na	--	--	na	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	na	9.7E+04	--	--	1.5E+00	--	--	9.7E+03	--	na	9.7E+03
Strontium-90	0	--	--	na	--	--	na	2.6E+04	--	--	4.0E-01	--	--	2.6E+03	--	na	2.6E+03
Tritium	0	--	--	na	--	--	na	5.2E+04	--	--	8.0E-01	--	--	5.2E+03	--	na	5.2E+03
Selenium	0	2.0E+01	5.0E+00	na	8.0E+02	1.4E+04	na	1.3E+08	--	--	2.0E+03	--	--	1.3E+07	--	na	1.3E+07
Silver	0	1.8E+00	--	na	7.1E+07	--	na	7.1E+07	5.0E+00	1.3E+00	1.1E+03	1.8E+04	5.5E+03	7.1E+06	5.5E+03	na	7.1E+06
Sulfate	0	--	--	na	7.1E+01	--	na	--	4.5E-01	--	--	1.6E+03	--	--	--	na	--
1,1,2,2-Tetrachloroethane ^g	0	--	--	na	--	--	na	1.9E+06	--	--	1.1E+01	--	--	1.9E+05	--	na	1.9E+05
Tetrachloroethylen ^g	0	--	--	na	--	--	na	1.5E+06	--	--	8.9E+00	--	--	1.5E+05	--	na	1.5E+05
Thallium	0	--	--	na	--	--	na	4.1E+04	--	--	6.3E-01	--	--	4.1E+03	--	na	4.1E+03
Toluene	0	--	--	na	--	--	na	1.3E+09	--	--	2.0E+04	--	--	1.3E+08	--	na	1.3E+08
Total dissolved solids	0	--	--	na	--	--	na	--	--	--	--	--	--	--	--	na	--
Toxaphene ^c	0	7.3E-01	2.0E-04	na	2.9E+01	5.7E-01	na	1.3E+02	1.8E-01	5.0E-05	7.5E-04	6.4E+02	2.2E-01	1.3E+01	2.9E+01	na	1.3E+01
Tributyltin	0	4.6E-01	6.3E-02	na	1.8E+01	1.8E+02	na	--	1.2E-01	1.6E-02	--	4.0E+02	6.9E+01	--	1.8E+01	na	6.9E+01
1,2,4-Trichlorobenzene	0	--	--	na	--	--	na	6.1E+06	--	--	9.4E+01	--	--	6.1E+05	--	na	6.1E+05
1,1,2-Trichloroethane ^g	0	--	--	na	--	--	na	7.2E+06	--	--	4.2E+01	--	--	7.2E+05	--	na	7.2E+05
Trichloroethylene ^c	0	--	--	na	--	--	na	1.4E+07	--	--	8.1E+01	--	--	1.4E+06	--	na	1.4E+06
2,4,6-Trichlorophenol ^c	0	--	--	na	--	--	na	1.1E+06	--	--	6.5E+00	--	--	1.1E+05	--	na	1.1E+05
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	na	--	--	--	--	--	--	--	--	na	--
Vinyl Chloride ^g	0	--	--	na	--	--	na	1.0E+06	--	--	6.1E+00	--	--	1.0E+05	--	na	1.0E+05
Zinc	0	8.5E+01	8.5E+01	na	3.4E+03	2.4E+05	na	4.5E+08	2.1E+01	2.1E+01	6.9E+03	7.4E+04	9.3E+04	4.5E+07	3.4E+03	na	4.5E+07

Notes:

- All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
- Discharge flow is highest monthly average or Form 20 maximum for Industries and design flow for Municipals
- Metals measured as Dissolved, unless specified otherwise
- "C" indicates a carcinogenic parameter
- Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a conc mix.
= (0.1(WQC - background conc.) + background conc.) for acute and chronic
- WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Metal	Target Value (SSTV)
Antimony	2.8E+06
Arsenic	5.4E+03
Barium	na
Cadmium	4.1E+01
Chromium III	6.6E+03
Chromium VI	2.6E+02
Copper	1.5E+02
Iron	na
Lead	1.2E+03
Manganese	na
Mercury	2.2E+01
Nickel	2.1E+03
Selenium	3.2E+02
Silver	2.8E+01
Zinc	1.4E+03

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Summary of Whole Effluent Toxicity (WET) Test Results

Test Date	Test Organism	Chronic Result (NOEC)	Acute Result (LC ₅₀)
Outfall 004			
September 1994	<i>Ceriodaphnia dubia</i>	100%	>100%
November 1995	<i>C. dubia</i>	100%	>100%
September 1996	<i>C. dubia</i>	Invalid	Invalid
July 1997	<i>C. dubia</i>	100%	>100%
August 1997	<i>C. dubia</i>	100%	>100%
September 1998	<i>C. dubia</i>	100%	>100%
February 1999	<i>C. dubia</i>	--	>100%
August 1999	<i>C. dubia</i>	100%	>100%
September 2000	<i>C. dubia</i>	100%	>100%
May 2001	<i>C. dubia</i>	100%	>100%
August 2002	<i>C. dubia</i>	100%	>100%
July 2003	<i>C. dubia</i>	100%	>100%
December 2007	<i>C. dubia</i>	8%*	>72%
Outfall 007			
October 1994	<i>C. dubia</i>	--	>100%
	<i>Pimephales promelas</i>	--	>100%
May 1995	<i>C. dubia</i>	--	>100%
	<i>P. promelas</i>	--	>100%
December 1995	<i>C. dubia</i>	--	>100%
	<i>P. promelas</i>	--	>100%
January 1997	<i>C. dubia</i>	--	Invalid
	<i>P. promelas</i>	--	Invalid
July 1997	<i>C. dubia</i>	--	>100%
	<i>P. promelas</i>	--	38%*
January 1998	<i>C. dubia</i>	--	>100%
March 1998	<i>P. promelas</i>	--	>100%
September 1998	<i>C. dubia</i>	--	>100%
	<i>P. promelas</i>	--	>100%
February 1999	<i>P. promelas</i>	--	>100%
August 1999	<i>C. dubia</i>	--	>100%
	<i>P. promelas</i>	--	>100%
September 2000	<i>C. dubia</i>	--	>100%
	<i>P. promelas</i>	--	>100%
May 2001	<i>C. dubia</i>	--	>100%
	<i>P. promelas</i>	--	>100%
October 2002	<i>C. dubia</i>	--	>100%
	<i>P. promelas</i>	--	>100%
September 2003	<i>C. dubia</i>	--	>100%
	<i>P. promelas</i>	--	>100%
December 2007	<i>C. dubia</i>	--	>100%
	<i>P. promelas</i>	--	--

*Questionable test based on non-linear dose-response relationship.

Spreadsheet for determination of WET test endpoints or WET limits

1	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
2															
3															
4															
5		Excel 97													
6		Revision Date: 12/05/01													
7		File: WETLIMIT0.xls													
8		(MIX EXE required also)													
9															
10															
11															
12															
13															
14															
15		Enter data in the cells with blue type:													
16															
17		Entry Date:	05/29/09												
18		Facility Name:	APCO Glen Lym												
19		VPDES Number:	VA0000370												
20		Outfall Number:	004												
21															
22		Plant Flow:	6.47 MGD												
23		Acute 1Q10:	116.5 MGD												
24		Chronic 7Q10:	117.4 MGD												
25															
26		Are data available to calculate CV? (Y/N)													
27		Are data available to calculate ACHR? (Y/N)													
28															
29															
30		IWC _a	4.48470935 %												
31		IWC _c	4.45185959 %												
32															
33		Dilution, acute	22.297989												
34		Dilution, chronic	22.4625229												
35															
36		WLA _a	6.68939671												
37		WLA _c	22.4625229												
38		WLA _{se}	66.8939671												
39															
40		ACR - acute/chronic ratio													
41		CV/Coefficient of Variation	0.4109447												
42		Constants	0.6010373												
43		ea	0.6010373												
44		eb	2.4334175												
45		ec	2.4334175												
46		ed	2.4334175												
47		LTA _{se}	27.4897212												
48		LTA _a	13.5008141												
49		MDL** with LTA _{se}	66.8939687												
50		MDL** with LTA _a	32.8531173												
51		AML with lowest LTA	32.8531173												
52															
53		IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TU _a TO TU _s													
54															
55		MDL with LTA _{se}	6.68939687												
56		MDL with LTA _a	3.28531173												
57															
58															

Acute Endpoint/Permit Limit Use as LC₅₀ in Special Condition, as TUA on DMR

ACUTE 3.285311726 TUA LC₅₀ = 31 % Use as 3.22 TUA

ACUTE WLA_a 6.68939671 Note: Inform the permittee that if the mean of the data exceeds this TUA: 1.0 a limit may result using WLA EXE

Chronic Endpoint/Permit Limit Use as NOEC in Special Condition, as TUE on DMR

CHRONIC 32.85311726 TUE NOEC = 4 % Use as 25.00 TUE

BOTH* 66.89396873 TUE NOEC = 2 % Use as 50.00 TUE

AML 32.85311726 TUE NOEC = 4 % Use as 25.00 TUE

ACUTE WLA_c 66.8939671 Note: Inform the permittee that if the mean of the data exceeds this TUE: 13.5008135 a limit may result using WLA EXE

CHRONIC WLA_c 22.4625229

* Both means acute expressed as chronic

% Flow to be used from MIX EXE

Plant Flow: 6.47 MGD Diffuser Modeling Study? Enter Y/N n

Acute 1Q10: 116.5 MGD Acute 1:1

Chronic 7Q10: 117.4 MGD Chronic 1:1

Are data available to calculate CV? (Y/N) N (Minimum of 10 data points, same species, needed)

Are data available to calculate ACHR? (Y/N) N (NOEC < LC50, do not use greater than data)

IWC_a 4.48470935 % Plant flow/plant flow + 7Q10

IWC_c 4.45185959 % Plant flow/plant flow + 7Q10

Dilution, acute 22.297989 100/WC_a

Dilution, chronic 22.4625229 100/WC_c

WLA_a 6.68939671 Instream criterion (0.3 TUA) X's Dilution, acute

WLA_c 22.4625229 Instream criterion (1.0 TUA) X's Dilution, chronic

WLA_{se} 66.8939671 ACR X's WLA_a - converts acute WLA_a to chronic units

LC50/NOEC (Default is 10 - if data are available, use tables Page 3)

CV/Coefficient of Variation 0.4109447 Default of 0.6 - if data are available, use tables Page 2)

Constants ea 0.6010373 Default = 0.41

eb 0.6010373 Default = 0.60

ec 2.4334175 Default = 2.43

ed 2.4334175 Default = 2.43 (1 samp)

LTA_{se} 27.4897212 WLA_a X's ea

LTA_a 13.5008141 WLA_c X's eb

MDL** with LTA_{se} 66.8939687 TUE NOEC = 1.494903 (Protects from acute/chronic toxicity)

MDL** with LTA_a 32.8531173 TUE NOEC = 3.043851 (Protects from chronic toxicity)

AML with lowest LTA 32.8531173 TUE NOEC = 3.043851 (Lowest LTA X's ed)

IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TU_a TO TU_s

MDL with LTA_{se} 6.68939687 TUE LC50 = 14.949031 %

MDL with LTA_a 3.28531173 TUE LC50 = 30.438512 %

Rounded NOEC's %

Rounded LC50's %

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
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107															
108															
109															

Page 2 - Follow the directions to develop a site specific CV (coefficient of variation)

IF YOU HAVE AT LEAST 10 DATA POINTS THAT ARE QUANTIFIABLE (NOT "<" OR ">") FOR A SPECIES, ENTER THE DATA IN EITHER COLUMN "G" (VERTERBATE) OR COLUMN "J" (INVERTERBATE). THE CV WILL BE PICKED UP FOR THE CALCULATIONS BELOW. THE DEFAULT VALUES FOR ea, eb, AND ec WILL CHANGE IF THE CV IS ANYTHING OTHER THAN 0.6.

Coefficient of Variation for effluent tests
CV = 0.6 (Default 0.6)

Using the log variance to develop ea
Z = 1.881 (97% probability stat from table)
A = -0.8892967
ea = 0.41094469

Using the log variance to develop eb
P = 100, step 2b of TSD
Mean = 0
Variance = 0.000000
CV = 0

Using the log variance to develop ec
P = 100, step 4a of TSD
Mean = 0
Variance = 0.000000
CV = 0

Using the log variance to develop ed
P = 100, step 4b of TSD
n = 1
This number will most likely stay as "1" for 1 sample/month.

Using the log variance to develop ea
P = 100, step 2a of TSD
Mean = 0
Variance = 0.000000
CV = 0

Using the log variance to develop eb
P = 100, step 2b of TSD
Mean = 0
Variance = 0.000000
CV = 0

Using the log variance to develop ec
P = 100, step 4a of TSD
Mean = 0
Variance = 0.000000
CV = 0

Using the log variance to develop ed
P = 100, step 4b of TSD
Mean = 0
Variance = 0.000000
CV = 0

Call: J9

Comment: This is assuming that the data are Type 2 data (none of the data in the data set are censored - "<" or ">").

Call: K18

Comment: This is assuming that the data are Type 2 data (none of the data in the data set are censored - "<" or ">").

Call: J22

Comment: Remember to change the "N" to "Y" if you have ratios entered, otherwise, they won't be used in the calculations.

Call: C40

Comment: If you have entered data to calculate an ACR on page 3, and this is still defaulted to "10", make sure you have selected "Y" in cell E21

Call: C41

Comment: If you have entered data to calculate an effluent specific CV on page 2, and this is still defaulted to "0.6", make sure you have selected "Y" in cell E20

Call: L48

Comment: See Row 151 for the appropriate dilution series to use for these NOECs

Call: G82

Comment: Vertebrates are:
Pinephales promelas
Oncorhynchus mykiss
Cymnodon variegatus

Call: J82

Comment: Invertebrates are:
Ceriodaphnia dubia
Mysidopsis bahia

Call: C17

Comment: Vertebrates are:
Pinephales promelas
Cymnodon variegatus

Call: M19

Comment: The ACR has been picked up from cell C34 on Page 1. If you have paired data to calculate an ACR, enter it in the tables to the left, and make sure you have a "Y" in cell E21 on Page 1. Otherwise, the default of 10 will be used to convert your acute data.

Call: M21

Comment: If you are only concerned with acute data, you can enter it in the NOEC column for conversion and the number calculated will be equivalent to the TUs. The calculation is the same: $100/\text{NOEC} = \text{TU}$ or $100/\text{LC50} = \text{TU}$.

Call: C138

Comment: Invertebrates are:
Ceriodaphnia dubia
Mysidopsis bahia

Test Date	Test Organism	Chronic Result (NOEC)	Acute Result (LC ₅₀)
Outfall 004			
September 1994	<i>Ceriodaphnia dubia</i>	100%	>100%
November 1995	<i>C. dubia</i>	100%	>100%
September 1996	<i>C. dubia</i>	Invalid	Invalid
July 1997	<i>C. dubia</i>	100%	>100%
August 1997	<i>C. dubia</i>	100%	>100%
September 1998	<i>C. dubia</i>	100%	>100%
February 1999	<i>C. dubia</i>	--	>100%
August 1999	<i>C. dubia</i>	100%	>100%
September 2000	<i>C. dubia</i>	100%	>100%
May 2001	<i>C. dubia</i>	100%	>100%
August 2002	<i>C. dubia</i>	100%	>100%
July 2003	<i>C. dubia</i>	100%	>100%
December 2007	<i>C. dubia</i>	8%*	>72%
Outfall 007			
October 1994	<i>C. dubia</i>	--	>100%
	<i>Pimephales promelas</i>	--	>100%
May 1995	<i>C. dubia</i>	--	>100%
	<i>P. promelas</i>	--	>100%
December 1995	<i>C. dubia</i>	--	>100%
	<i>P. promelas</i>	--	>100%
January 1997	<i>C. dubia</i>	--	Invalid
	<i>P. promelas</i>	--	Invalid
July 1997	<i>C. dubia</i>	--	>100%
	<i>P. promelas</i>	--	38%*
January 1998	<i>C. dubia</i>	--	>100%
March 1998	<i>P. promelas</i>	--	>100%
September 1998	<i>C. dubia</i>	--	>100%
	<i>P. promelas</i>	--	>100%
February 1999	<i>P. promelas</i>	--	>100%
August 1999	<i>C. dubia</i>	--	>100%
	<i>P. promelas</i>	--	>100%
September 2000	<i>C. dubia</i>	--	>100%
	<i>P. promelas</i>	--	>100%
May 2001	<i>C. dubia</i>	--	>100%
	<i>P. promelas</i>	--	>100%
October 2002	<i>C. dubia</i>	--	>100%
	<i>P. promelas</i>	--	>100%
September 2003	<i>C. dubia</i>	--	>100%
	<i>P. promelas</i>	--	>100%
December 2007	<i>C. dubia</i>	--	>100%
	<i>P. promelas</i>	--	--

*Questionable test based on non-linear dose-response relationship.

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY Water Regional Office

3019 Peters Creek Road

Roanoke, VA 24019

SUBJECT: APCO - Glen Lyn Site Visit; Permit No. VA0000370

TO: File

FROM: Lynn V. Wise, Environmental Engineer, Sr.

DATE: May 12, 2009

COPIES:

A site visit to the referenced facility was conducted on May 13, 2009. Present at the inspection were Mr. Jon Magalski, Environmental Specialist, and Mr. Joe Ryder, Environmental Coordinator, of American Electric Power. The outfalls, treatment systems, and storm water drainage areas were inspected to clarify and verify the permit application.

The facility consists of one 90 Mw and one 240 Mw coal-fired unit (#5 and #6) for the generation of electricity. Each unit has once through cooling water and electrostatic precipitators for fly ash collection. Other sources of wastewater are bottom ash sluicing, storm water associated with industrial activity, and "low volume waste sources" as defined by the Code of Federal Regulations (40 CFR, Part 423).

Discharge from **outfall 001** contains once through non-contact cooling water from the Unit #6 turbine oil cooler and the majority of the storm water run-off from the plant site. The discharge flows into an underground tunnel (Ginny Hollow) which enters the New River. There is no flow onto the facility's property through Ginny Hollow except during wet weather when run-off from adjacent land is naturally channeled into the hollow. There are several drop inlets in the plant area that drain to 001. Along with fugitive coal dust, there are various materials stored on site with the potential to contaminate storm water. These include: structural steel components, scrap metal, wooden pallets, lube oil, maintenance equipment, asbestos piping, and above and below ground storage tanks. The largest of the storage tanks is a 500,000-gallon fuel oil tank; however, the company is in the process of closing out this tank including remediation of the surrounding soil. There is also a 365,000 gallon tank that was previously used for mineral oil storage that is now being used for fuel oil storage. These are located in the same area and are surrounded by an earthen berm, which retains storm water. The transfer area where unloading of tanker trucks occurs is not inside this berm, but is equipped with a catch basin under the valves and a sump under a drop inlet on the concrete pad to reduce potential storm water contamination. The sump is pumped out by Necessary Oil when needed or the oil/water can be pumped out into empty drums for disposal as used oil.

Once-through noncontact cooling water (screened intake water from the New River) is the sole source of discharge for **outfalls 002, 003 and 005** with the exception of a storm water drop inlet from the paved parking area in front of the plant entrance (**outfall 502**) which would discharge to **outfall 005** in the case of a storm larger than a 10-year, 24-hour storm event. Otherwise, the storm water is routed through the bottom ash ponds and is discharged through **outfall 004**. This drop inlet also collects run-off from the roof drains of the employee assembly building in front of the plant and drainage from the secondary containment dike from the covered fuel oil storage tanks located behind this building. In the event any storm water should accumulate in the dike, it would be manually drained after visual inspection.

Outfall 004 results from the discharge of the bottom ash treatment ponds. The water transport system for the bottom ash and all of the low volume waste sources in the facility are directed to this treatment system. Polymers are added on an as needed basis. There are two bottom ash ponds with one being operational at a time. The pond usage is alternated about every six months. In addition to the storm water that falls directly on the bottom ash pond area, roof drains from the main plant buildings flow into this treatment system. There are also drainage pipes from the Route 460 bridge that drop onto the bottom ash pond area. Discharge from the bottom ash pond flows into a polishing pond for further treatment before the final outfall.

When the bottom ash pond is taken out of service (the solids reach a certain level), the water is allowed to sit for a time for solids to settle and the pond is decanted. The pond is excavated (by an outside contractor) and the solids are sold or disposed of in the onsite landfill. This discharge flows to the East River (a tributary to the New River).

The fly ash pond discharging to **outfall 006** is used on an intermittent basis. The wet collection system for fly ash was removed from the plant over twenty years ago. On occasion, the dry collection system is down and wet sluicing must be used. In the past, this would occur for about one to two days at a time, or seven to ten days per year; however, plans are to take this system completely out of service. The pond has a maximum operating depth of 32 feet. At the time of the inspection, the water level was approximately fifteen feet below the effluent weir (there was approximately five feet of water standing in the lower end of the pond). However, inspection of the outfall showed a slow trickle from the pipe. This is believed to be the result of seepage through the dike or groundwater. There was no evidence of any recent large discharges from the pipe. The pond also collects storm water that falls on the pond area. As noted, this outfall will be blocked and the pond system taken out of service. At that time, the permit may be modified to remove the outfall.

In the past, the pond discharging to **outfall 007** was used for treatment of the fly ash sluice in the same manner as the fly ash pond leading to outfall 006. With the introduction of the dry collection system, the pond became the method used to collect storm water runoff from the landfill area. Contact (active fill area and leachate) and noncontact storm water was collected when the landfill was active, but the landfill has been closed. Leachate is collected and treated in a separate pond before being pumped into the runoff collection pond, as needed. Storm water from the surrounding area runs in roadside ditches into the runoff collection pond. Although not common, truck rinse water is also collected. It was anticipated that a new landfill would be constructed in West Virginia. The landfill has been permitted, but no construction activity has occurred. Instead, the company plans to expand the current landfill into the area where the fly ash pond currently sits. One additional outfall, **008**, was added during the previous permit cycle, but it was never used. Instead, the outfall is being relocated to address storm water runoff from the expanded landfill. Mr. Magalski indicated that he would submit new drawings showing the location of the outfall. The discharge from 008 will be to an unnamed tributary of Adair run and consist solely of noncontact runoff from a storm water management pond. The expansion has not yet been permitted by DEQ and it is unlikely that there will be any discharge from this outfall during the next permit term.

Page 3 - Follow directions to develop a site specific ACR (Acute to Chronic Ratio)

112 To determine Acute/Chronic Ratio (ACR), insert usable data below. Usable data is defined as valid paired test results.
 114 acute and chronic, tested at the same temperature, same species. The chronic NOEC must be less than the acute
 115 LC₅₀ since the ACR divides the LC₅₀ by the NOEC. LC₅₀'s >100% should not be used.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
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172															

Table 1. ACR using Vertebrate data

Table 2. ACR using Invertebrate data

Table 3. Convert LC₅₀'s and NOEC's to Chronic TU's for use in WLA EXE

Set #	LC ₅₀	NOEC	Test ACR	Logarithm	Geomean	Antilog	ACR to Use
1	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
3	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
4	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
5	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
6	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
8	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
9	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
10	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA

ACR for vertebrate data: 0

ACR for invertebrate data: 0

Table 4. DILUTION SERIES TO RECOMMEND

Monitoring	% Effluent	TUc	Limit	% Effluent	TUc
	2.0	49.164308	1		100
	0.1426182		0.1		
	100.0	1.00	100.0		1.00
	14.3	7.01	10.0		10.00
	2.0	49.16	1.0		100.00
	0.3	344.73	0.1		1000.00
	0.04	2417.13	0.0		10000.00
	0.01	16948.25	0.0		100000.00
	0.00	118836.49	0.0		#####

if WLA EXE determines that an acute limit is needed, you need to convert the TUc answer you get to TUs and then an LC50, enter it here:

NO DATA	TUa	%LC ₅₀

Call: J9

Comment: This is assuming that the data are Type 2 data (none of the data in the data set are censored - "<" or ">").

Call: K18

Comment: This is assuming that the data are Type 2 data (none of the data in the data set are censored - "<" or ">").

Call: J22

Comment: Remember to change the "N" to "Y" if you have rates entered, otherwise, they won't be used in the calculations.

Call: C40

Comment: If you have entered data to calculate an ACR on page 3, and this is still defaulted to "10", make sure you have selected "Y" in cell E21

Call: C41

Comment: If you have entered data to calculate an effluent specific CV on page 2, and this is still defaulted to "0.6", make sure you have selected "Y" in cell E20

Call: L48

Comment: See Row 151 for the appropriate dilution series to use for these NCECs

Call: G82

Comment:

Vertebrates are:

Pimephales promelas

Oncorhynchus mykiss

Cyprinodon variegatus

Call: J82

Comment:

Invertebrates are:

Ceriodaphnia dubia

Mysidopsis bahia

Call: C17

Comment: Vertebrates are:

Pimephales promelas

Cyprinodon variegatus

Call: M19

Comment: The ACR has been picked up from cell C34 on Page 1. If you have paired data to calculate an ACR, enter it in the tables to the left, and make sure you have a "Y" in cell E21 on Page 1. Otherwise, the default of 10 will be used to convert your acute data.

Call: M121

Comment: If you are only concerned with acute data, you can enter it in the NOEC column for conversion and the number calculated will be equivalent to the TL_a. The calculation is the same: $100/\text{NOEC} = \text{TL}_c$ or $1000/\text{CSO} = \text{TL}_a$.

Call: C138

Comment: Invertebrates are:

Ceriodaphnia dubia

Mysidopsis bahia

ATTACHMENT D
FEDERAL EFFLUENT GUIDELINES

Excerpts from 40 CFR 423
(Federal Effluent Guidelines for
Steam Electric Power Generation)

§ 422.62 Effluent limitations and guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available.

The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart after application of the best practicable control technology currently available:

[Metric units (kg/kg of product); English units (lb/1,000 lb of product)]

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
TSS	0.50	0.25
Total phosphorus (as P) .....	.80	.40
Fluoride (as F) .....	.30	.15
pH	(¹)	(¹)

¹ Within the range 6.0 to 9.5.

§ 422.63 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable.

The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart after application of the best available technology economically achievable:

[Metric units (kg/kg of product); English units (lb/1,000 lb of product)]

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
Total phosphorus (as P)	0.56	0.26
Fluoride (as F) .....	.21	.11

[44 FR 50744, Aug. 23, 1979]

§ 422.64 [Reserved]

§ 422.65 Standards of performance for new sources.

The following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this

section, which may be discharged by a point source subject to the provisions of this subpart after application of the standards of performance for new sources:

[Metric units (kg/kg of product); English units (lb/1,000 lb of product)]

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
TSS	0.35	0.18
Total phosphorus (as P) .....	.56	.28
Fluoride (as F) .....	.21	.11
pH	(¹)	(¹)

¹ Within the range 6.0 to 9.5.

§ 422.66 [Reserved]

§ 422.67 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology.

Except as provided in §§ 125.30 through 125.32, the following limitations establish the quantity or quality of pollutants or pollutant properties, controlled by this section, which may be discharged by a point source subject to the provisions of this subpart after application of the best conventional pollutant control technology:

[Metric units (kg/kg of product); English units (lb/1,000 lb of product)]

Effluent characteristic	Effluent limitations	
	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed—
TSS	0.35	0.18
pH	(¹)	(¹)

¹ Within the range 6.0 to 9.5.

[51 FR 25000, July 9, 1986]

PART 423—STEAM ELECTRIC POWER GENERATING POINT SOURCE CATEGORY

Sec. 423.10 Applicability.
423.11 Specialized definitions.

Environmental Protection Agency

423.12 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best practicable control technology currently available (BPT).

423.13 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT).

423.14 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology (BCT). [Reserved]

423.15 New source performance standards (NSPS).

423.16 Pretreatment standards for existing sources (PSES).

423.17 Pretreatment standards for new sources (PFSNS).

APPENDIX A TO PART 423—126 PRIORITY POLLUTANTS

AUTHORITY: Secs. 301; 304(b), (c), (e), and (g); 306(b) and (c); 307(b) and (c); and 501, Clean Water Act (Federal Water Pollution Control Act Amendments of 1972, as amended by Clean Water Act of 1977) (the "Act"), 33 U.S.C. 1311; 1314(b), (c), (e), and (g); 1316(b) and (c); 1317(b) and (c); and 1361; 86 Stat. 816, Pub. L. 92-500; 91 Stat. 1587, Pub. L. 95-217, unless otherwise noted.

SOURCE: 47 FR 52304, Nov. 19, 1982, unless otherwise noted.

§ 423.10 Applicability.

The provisions of this part are applicable to discharges resulting from the operation of a generating unit by an establishment primarily engaged in the generation of electricity for distribution and sale which results primarily from a process utilizing fossil-type fuel (coal, oil, or gas) or nuclear fuel in conjunction with a thermal cycle employing the steam water system as the thermodynamic medium.

§ 423.11 Specialized definitions.

In addition to the definitions set forth in 40 CFR part 401, the following definitions apply to this part:

(a) The term *total residual chlorine* (or total residual oxidants for intake water with bromides) means the value obtained using the amperometric method for total residual chlorine described in 40 CFR part 136.

(b) The term *low volume waste sources* means, taken collectively as if from one source, wastewater from all sources except those for which specific

limitations are otherwise established in this part. Low volume wastes sources include, but are not limited to: wastewaters from wet scrubber air pollution control systems, ion exchange water treatment system, water treatment evaporator blowdown, laboratory and sampling streams, boiler blowdown, floor drains, cooling tower basin cleaning wastes, and recirculating house service water systems. Sanitary and air conditioning wastes are not included.

(c) The term *chemical metal cleaning waste* means any wastewater resulting from the cleaning of any metal process equipment with chemical compound including, but not limited to, boiler tube cleaning, boiler fireside cleaning, and air preheater cleaning.

(d) The term *metal cleaning waste* means any wastewater resulting from cleaning [with or without chemical cleaning compounds] any metal process equipment including, but not limited to, boiler tube cleaning, boiler fireside cleaning, and air preheater cleaning.

(e) The term *fly ash* means the ash that is carried out of the furnace by the gas stream and collected by mechanical precipitators, electrostatic precipitators, and/or fabric filters. Economizer ash is included when it is collected with fly ash.

(f) The term *bottom ash* means the ash that drops out of the furnace gas stream in the furnace and in the economizer sections. Economizer ash is included when it is collected with bottom ash.

(g) The term *once through cooling water* means water passed through the main cooling condensers in one or two passes for the purpose of removing waste heat.

(h) The term *recirculated cooling water* means water which is passed through the main condensers for the purpose of removing waste heat, passed through a cooling device for the purpose of removing such heat from the water and then passed again, except for blowdown, through the main condenser.

(i) The term *10 year, 24-hour rainfall event* means a rainfall event with a probable recurrence interval of once in ten years as defined by the National Weather Service in Technical Paper No. 40. *Rainfall Frequency Atlas of the United States*, May 1961 or equivalent

regional rainfall probability information developed therefrom.

(j) The term *blowdown* means the minimum discharge of recirculating water for the purpose of discharging materials contained in the water, the further buildup of which would cause concentration in amounts exceeding limits established by best engineering practices.

(k) The term *average concentration* as it relates to chlorine discharge means the average of analyses made over a single period of chlorine release which does not exceed two hours.

(l) The term *free available chlorine* shall mean the value obtained using the amperometric titration method for free available chlorine described in *Standard Methods for the Examination of Water and Wastewater*, page 112 (13th edition).

(m) The term *coal pile runoff* means the rainfall runoff from or through any coal storage pile.

§ 423.12 **Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of technology currently available (BPT).**

(a) In establishing the limitations set forth in this section, EPA took into account all information it was able to collect, develop and solicit with respect to factors (such as age and size of plant, utilization of facilities, raw materials, manufacturing processes, non-water quality environmental impacts, control and treatment technology available, energy requirements and costs) which can affect the industry subcategorization and effluent levels established. It is, however, possible that data which would affect these limitations have not been available and, as a result, these limitations should be adjusted for certain plants in this industry. An individual discharger or other interested person may submit evidence to the Regional Administrator (or to the State, if the State has the authority to issue NPDES permits) that factors relating to the equipment or facilities involved, the process applied, or other such factors related to such discharger are fundamentally different from the factors considered in the establishment of the guidelines. On

the basis of such evidence or other available information, the Regional Administrator (or the State) will make a written finding that such factors are or are not fundamentally different for that facility compared to those specified in the Development Document. If such fundamentally different factors are found to exist, the Regional Administrator or the State shall establish for the discharger effluent limitations in the NPDES Permit either more or less stringent than the limitations established herein, to the extent dictated by such fundamentally different factors. Such limitations must be approved by the Administrator of the Environmental Protection Agency. The Administrator may approve or disapprove such limitations, specify other limitations, or initiate proceedings to revise these regulations. The phrase "other such factors" appearing above may include significant cost differentials. In no event may a discharger's impact on receiving water quality be considered as a factor under this paragraph.

(b) Any existing point source subject to this subpart must achieve the following effluent limitations representing the degree of effluent reduction by the application of the best practicable control technology currently available (BPT):

(1) The pH of all discharges, except those through cooling water, shall be within the range of 6.0-9.0.

(2) There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

(3) The quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the concentration listed in the following table:

Pollutant or pollutant property	BPT effluent limitations	
	Maximum for any 1 day (mg/l)	Average of daily values for 30 consecutive days shall not exceed (mg/l)
TSS	100.0	30.0
Oil and grease	20.0	15.0

(4) The quantity of pollutants discharged in fly ash and bottom ash

Environmental Protection Agency

transport water shall not exceed the quantity determined by multiplying the flow of fly ash and bottom ash transport water times the concentration listed in the following table:

Pollutant or pollutant property	BPT effluent limitations	
	Maximum for any 1 day (mg/l)	Average of daily values for 30 consecutive days shall not exceed (mg/l)
TSS	100.0	30.0
Oil and grease	20.0	15.0

(5) The quantity of pollutants discharged in metal cleaning wastes shall not exceed the quantity determined by multiplying the flow of metal cleaning wastes times the concentration listed in the following table:

Pollutant or pollutant property	BPT effluent limitations	
	Maximum for any 1 day (mg/l)	Average of daily values for 30 consecutive days shall not exceed (mg/l)
TSS	100.0	30.0
Oil and grease	20.0	15.0
Copper, total	1.0	1.0
Iron, total	1.0	1.0

(6) The quantity of pollutants discharged in once through cooling water shall not exceed the quantity determined by multiplying the flow of once through cooling water sources times the concentration listed in the following table:

Pollutant or pollutant property	BPT effluent limitations	
	Maximum concentration (mg/l)	Average concentration (mg/l)
Free available chlorine	0.5	0.2

(7) The quantity of pollutants discharged in cooling tower blowdown shall not exceed the quantity determined by multiplying the flow of cooling tower blowdown sources times the

concentration listed in the following table:

Pollutant or pollutant property	BPT effluent limitations	
	Maximum concentration (mg/l)	Average concentration (mg/l)
Free available chlorine	0.5	0.2

(8) Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless utility can demonstrate to the Regional Administrator or State, if the State has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level or chlorination.

(9) Subject to the provisions of paragraph (b)(10) of this section, the following effluent limitations shall apply to the point source discharges of coal pile runoff:

Pollutant or pollutant property	BPT effluent limitations	
	Maximum concentration for any time (mg/l)	TSS
Free available chlorine	0.5	50

(10) Any untreated overflow from facilities designed, constructed, and operated to treat the volume of coal pile runoff which is associated with a year, 24 hour rainfall event shall not subject to the limitations in paragraph (b)(9) of this section.

(11) At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitations specified in paragraphs (b)(9) through (7) of this section. Concentration limitations shall be those concentrations specified in this section.

(12) In the event that waste streams from various sources are combined for treatment or discharge, the quantity of each pollutant or pollutant property controlled in paragraphs (b)(1) through (11) of this section attributable to each controlled waste source shall not ex-

ceed the specified limitations for that waste source.

(The information collection requirements contained in paragraph (a) were approved by the Office of Management and Budget under control number 2000-0194)

[47 FR 52304, Nov. 19, 1982, as amended at 48 FR 31404, July 8, 1983]

§ 423.13 Effluent limitations guidelines representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT).

Except as provided in 40 CFR 125.30 through 125.32, any existing point source subject to this part must achieve the following effluent limitations representing the degree of effluent reduction attainable by the application of the best available technology economically achievable (BAT).

(a) There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.

(b)(1) For any plant with a total rated electric generating capacity of 25 or more megawatts, the quantity of pollutants discharged in once through cooling water from each discharge point shall not exceed the quantity determined by multiplying the flow of once through cooling water from each discharge point times the concentration listed in the following table:

Pollutant or pollutant property	BAT Effluent Limitations (mg/l)	
	Maximum concentration	
Total residual chlorine	0.20	

(2) Total residual chlorine may not be discharged from any single generating unit for more than two hours per day unless the discharger demonstrates to the permitting authority that discharge for more than two hours is required for macroinvertebrate control. Simultaneous multi-unit chlorination is permitted.

(c)(1) For any plant with a total rated generating capacity of less than 25 megawatts, the quantity of pollutants discharged in once through cooling water shall not exceed the quantity determined by multiplying the flow of once through cooling water sources

times the concentration listed in the following table:

Pollutant or pollutant property	BAT effluent limitations	
	Maximum concentration (mg/l)	Average concentration (mg/l)
Free available chlorine	0.5	0.2

(2) Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or State, if the State has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level of chlorination.

(d)(1) The quantity of pollutants discharged in cooling tower blowdown shall not exceed the quantity determined by multiplying the flow of cooling tower blowdown times the concentration listed below:

Pollutant or pollutant property	BAT effluent limitations	
	Maximum concentration (mg/l)	Average concentration (mg/l)
Free available chlorine	0.5	0.2

(2) Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or State, if the State has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level of chlorination.

The 125 priority pollutants (Appendix A) contained in chemicals added for cooling tower maintenance, except:

Chromium, total	1.0
Zinc, total	1.0

¹ No detectable amount.

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(3) At the permitting authority's discretion, instead of the monitoring specified in 40 CFR 122.11(b) compliance with the limitations for the 126 priority pollutants in paragraph (d)(1) of this section may be determined by engineering calculations which demonstrate that the regulated pollutants are not detectable in the final discharge by the analytical methods in 40 CFR part 136.

(e) The quantity of pollutants discharged in chemical metal cleaning wastes shall not exceed the quantity determined by multiplying the flow of chemical metal cleaning wastes times the concentration listed in the following table:

Pollutant or pollutant property	BAT effluent limitations	
	Maximum for any 1 day (mg/l)	Average of daily values for 30 consecutive days shall not exceed (mg/l)
Copper, total	1.0	1.0
Iron, total	1.0	1.0

(f) [Reserved]—Nonchemical Metal Cleaning Wastes.

(g) At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitations specified in paragraphs (b) through (e) of this section. Concentration limitations shall be those concentrations specified in this section.

(h) In the event that waste streams from various sources are combined for treatment or discharge, the quantity of each pollutant or pollutant property controlled in paragraphs (a) through (g) of this section attributable to each controlled waste source shall not exceed the specified limitation for that waste source.

(The information collection requirements contained in paragraphs (c)(2) and (d)(2) were approved by the Office of Management and Budget under control number 2040-0040. The information collection requirements contained in paragraph (d)(3) were approved under control number 2040-0033.)

[47 FR 52304, Nov. 19, 1982, as amended at 48 FR 31404, July 8, 1983]

representing the degree of effluent reduction attainable by the application of the best conventional pollutant control technology (BCT). [Reserved]

§ 423.15 New source performance standards (NSPS).

Any new source subject to this subpart must achieve the following new source performance standards:

(a) The pH of all discharges, except once through cooling water, shall be within the range of 6.0-9.0.
 (b) There shall be no discharge of polychlorinated biphenyl compounds as those commonly used for transformer fluid.

(c) The quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the concentration listed in the following table:

Pollutant or pollutant property	NSPS effluent limitations	
	Maximum for any 1 day (mg/l)	Average of daily values for 30 consecutive days shall not exceed (mg/l)
TSS	100.0	30.0
Oil and grease	20.0	15.0

(d) The quantity of pollutants discharged in chemical metal cleaning wastes shall not exceed the quantity determined by multiplying the flow of chemical metal cleaning wastes times the concentration listed in the following table:

Pollutant or pollutant property	NSPS effluent limitations	
	Maximum for any 1 day (mg/l)	Average of daily values for 30 consecutive days shall not exceed (mg/l)
TSS	100.0	30.0
Oil and grease	20.0	15.0
Copper, total	1.0	1.0
Iron, total	1.0	1.0

(e) [Reserved]—Nonchemical Metal Cleaning Wastes.

(f) The quantity of pollutants discharged in bottom ash transport water shall not exceed the quantity determined by multiplying the flow of the